

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 22

NEW YORK, THURSDAY, AUGUST 17, 1922

Number 7

Time Always Befriends the Striker

AT THE Cleveland convention operators are agreeing to pay wages which only a little while ago they declared they could not pay. There will not be lacking those who will say that they could have paid them when the strike commenced had they only been willing. The reason for the operators' change of viewpoint is that now, after the strike has continued for nearly five long weary months, the stocks are almost exhausted, winter looms ahead, the railroads threaten to be congested and the public must buy from union mines and pay enough to make bituminous mining profitable no matter what the wage may be.

Mr. Lewis hoped to get the same result by unionizing the operators as against the public. He desired to form a big combination of mine operators so large as to be able to fix the price. In compelling them to pay a high wage he knew they must sell the coal at a high figure. They could do this only if they were numerous enough that the public could not sidestep but must buy from them. That is why Lewis wanted the Central Competitive field to bargain with him, and that is why, for a while, he sought to have the Washington authorities declare in favor of a uniform wage in the union and non-union regions alike. He was for unionizing the operators, forming them into a trust which could demand from the public what it would, and would be able out of excessive prices to pay excessive wages to the miners.

But the operators were afraid that such a union or wage trust was illegal. They avoided entering into it even though the President and Secretary Davis invited them, yes implored them to form it, and even though the public wondered why they lacked so greatly a proper sense of obligation that they failed to act in accordance with Federal suggestions.

Now at least there is no risk that the public will buy in the cheapest market because that market is too small for all to enter and is no longer cheap. Even in non-union regions wages have been increased. There is no longer any fear of the competition of non-union men, not at least before April, 1923. The union operators can now safely pay the wage that tended to bankrupt them before April, 1922.

It nearly always ends this way. A strike commences with strong arguments in favor of the operators and ends with conditions such as make the operators friendly and even anxious to concede, because there arrives a time when concession promises profit. Then the only fear is that a contract will be made of such duration that conditions will change before the contract expires.

The conclusion of terms between the union and scattered operators from 7 states does not settle the strike—it breaks the deadlock. The switch in policy on the part of the miners from four-state to district and individual settlements maintains the contention we have

made from the beginning that what Lewis was really after was no reduction in wages; that his policy of no district settlements was designed for that and that alone. It was fine propaganda to hold the men in line from January to July but on Aug. 14 it becomes ballast to throw overboard.

Using the Public for His Own Ends

WHEN the coal miners start work it will be with no reduction in wages and under no promise or obligation to arbitrate future wage scales. There is indeed but a slim chance that, as a result of nearly five months of strike, possibly two months of sympathetic rail strike, and no one yet knows how much human suffering and industrial paralysis in the coming winter as a direct result of both, the public will have the least degree of insurance against a similar upheaval next year.

During the Cleveland conference John Lewis said to the public through the press "The miners have won their fight and it is practically over. There is no longer a thought in my quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure *without undue humiliation of the operators. We have no desire to humiliate them.* We only want the immediate resumption of mining, the return to work of the men and the relief of the public." Again, "The miners have not deviated any degree from their original policy." And finally "The miners will never consent to arbitration." Thus from his present pinnacle speaks the head of the miners' union.

Cast your mind back to the early fall of 1919 when John Lewis fell heir to the presidency of the United Mine Workers through the retirement of Hayes. Hayes' legacy to Lewis, an untried leader, was a program so extreme as to shock the country. Lewis had to decide then and there between a policy of moderation and a policy of radicalism. He knew he was accused of being afraid to fight. He knew of the growing influence of the Farringtons, Howats and Brophys. When he set his compass toward "Fight" he took the most momentous step in the labor history of coal.

Taking up Hayes' crazy program of nationalization, 60 per cent increase of wages and the 30-hour week, and throwing it into the mine workers' convention in 1919, Lewis routed his opponents. Violating his contract with the operators, he called a national strike for Nov. 1, 1919, because to have waited until the contract expired on April 1, 1920, would have given the public an opportunity to build up coal reserves. The unlooked for forced resumption of mining by injunction and the forced acceptance of arbitration nearly upset John Lewis, but the 27 per cent increase in wages awarded was so much better than the miners expected that Lewis held his prestige.

Knowing full well that every force in the land was

driving toward liquidation of wages, Lewis in 1921 held to his 1919 decision to fight. To be a successful labor leader one must always be fighting for something more, demanding and never conceding, mindful always that the mine workers have more stomach for a fight than any one else in the country.

How Lewis has held his men in line, despite internal dissent, how he has defied in succession the operators, the President and the people of the country are part of today's realizations.

The burden of all this is that John Lewis is for the moment at the head of the most powerful labor organization in this country. He can hold that cherished position so long as he maintains the offensive and wins his strikes. He is no quitter, hence will have to pull another strike next year or the next. Which is another way of saying that John Lewis, strong as he has demonstrated he is, cannot control the miners. He leads in the direction they are going. The movement is bigger than Lewis—he cannot now put on the brakes.

Which brings us hard up against the problem of what is the country going to do about it? The framers of our government planned to prevent the usurpation of power by majorities. They saw to it that the minority might not be gagged. Little did they foresee the power of organized minorities. Less than 600,000 men of our population of some 20,000,000 workers have this year held the whip hand over all the remainder. The hundred million people who this winter will suffer for lack of the coal that the less than 600,000 refused to dig have not spoken yet. Public opinion is passive. No one in authority has told the people the trouble that lies ahead. What can the public say? It has said "Protect those who would work," but with the protection provided too few have been willing to work. The public can say—"Compose your differences without depriving us of fuel and transportation." If it cannot say that plain enough, forcefully enough, to reach and convince the most unheeding then we must wait till the union disintegrates through its own super-aggrandizement, submitting in the meanwhile to its tyranny, or we must go on fighting it as best we may until it returns to reason.

None of the spectacles are pleasant—which will you have and what are you going to do to bring it to pass?

From those operators who are crawling to Lewis begging permission to mine coal, those he would not "humiliate," to those whose backbones are upright though their knees may tremble is a far cry, with every human motive ranging from mere profit-seeking to the highest ideals of public service.

Strength for the Next Battle

ALTOGETHER apart from the outcome of the passages at arms with John L. Lewis and his powerful organization of labor, it must be said that the coal operators of Illinois and some other sections of the country give signs of having learned a lesson. They have hung together as never before. That is a proud accomplishment even though it may be greeted by humorous sallies concerning separate hangings. In Illinois as in probably no other state, owners of mines have had thrust upon them painful object lessons in the ultimate cost of past surrenders to the union. Every time they broke apart to make peace with the miners for immediate gain, they lost in the long run. Every capitulation added power and arrogance to the

United Mine Workers of America. It is all very evident now, even to those operators who, for financial and other reasons, have been most keenly in need of producing coal.

It is so evident, in fact, that every operator knows there lies ahead in this country a battle that must be won. It will be a long battle and one requiring the utmost determination and sacrifice but it must be won if the coal industry is to attain the true normalcy so much desired by everybody but union labor. The skirmishes and heavy engagements of this summer have given the coal operators of the land opportunity to exert those forces for solidarity which are developing. Surely such forces have gained potential strength by this exercise. They certainly have in Illinois. Defeat without surrender in a fight for a just cause often is more stimulating to morale than victory.

It Is Up to Mr. Coal Man

EXERCISE of governmental control over coal distribution is producing the usual and expected crop of knockers. To some everything that is being done by the agencies at work in Washington is wrong. There is the customary blatant critical line of dope being written by the usual onlookers telling the country, or such as their tirades may reach, that it is all wrong. The thing to do, for instance, is to produce more coal and there will be no necessity for the government putting its hand on distribution.

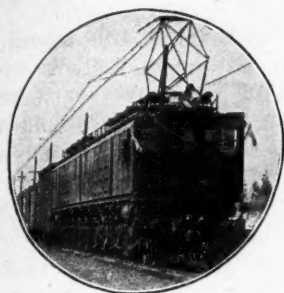
In the first place those who take, or pretend to take, such a stand refuse to recognize that in this crisis the first essential step toward getting more coal out of the ground is to make what coal is being produced go as far as possible toward averting a shortage at points and with those consumers whose continuity of operation is essential to the nation. It is not too much to say that under present circumstances four million tons of coal per week reaching the proper consumers may be worth more than five million tons imperfectly distributed. To argue that Mr. Hoover is making bricks without straw is but partially stating the case—he is short of mud as well.

There isn't enough coal to go around and there isn't going to be enough. It's perfectly absurd for some coal men to complain about the government messing in the situation, because if it didn't, a thousand times as many people who are not coal men would demand it.

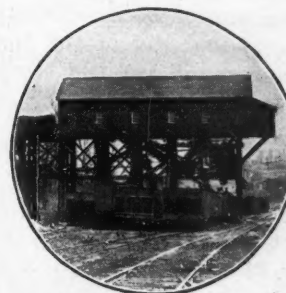
The old job of 1917-18 and of 1920 of spreading a thin supply of coal over a wide and persistent demand and need is here again. It must be undertaken with the best tools at hand. No one who recalls the difficulties that beset Washington in previous years when with wide-spread authority the control of coal distribution was undertaken can but appreciate what Mr. Hoover and his associates are facing.

It is useless to rail at the fact that Washington is putting its hand to the task—it had no alternative. It is childish to curse and growl at the methods, better take a hand in trying to improve them.

We are not at war with a foreign power, it is true, and a call to patriotism falls short on that count. But what is war but an effort to avert national disaster, and what less faces this country this winter with crippled railroads and short coal supply? The coal man knows this better than any one else and he can help or hinder as he wills.



Railroad Electrification Will Make Important Changes In the Coal Industry



**Roads Must Do More Work and Do It More Economically—
Byproduct Plants and Power Stations Will Be Operated Con-
currently; Coke and Gas Being Used for Generation of Energy**

BY CHARLES MEANS*
Pittsburgh, Pa.

COMMERCIAL development in this country seems to move in fairly well-defined cycles. Years ago we started in to build railroads and it now appears that we built them in plenty, although some were not well located with respect to the general requirements of the country. At a little later date telegraph and telephone lines were being constructed all over the land. In recent years we have been engaged in making one of these lines do as much work as several of them were capable of doing at the time they were constructed.

Just now we are engaged in building highways on a scale unthought of a few years ago. Whether our type of construction will handle future traffic is a problem that the next generation only can ascertain. We are engaged also in the construction of high-voltage transmission lines for the conveyance of vast quantities of energy over relatively long distances. It is reasonable to suppose that in time the wasteful burning of coal in small units will disappear and in its place will come large central stations where the coal can be consumed economically with full recovery of valuable byproducts.

ELECTRICITY FOR LOW-COST TRANSPORTATION

The railroads of the country are facing a problem that, if not solved, may materially affect the development of those regions remotely located with respect to water transportation. Their main problem is not necessarily lack of trackage but high cost of operation. Low transportation expenses and charges are essential for the free interchange of commerce, and the degree of economic development of any district is proportional to its transportation facilities.

As the situation now stands, with the railroads unable to handle successfully increasing inland traffic the next cycle would appear to be the complete electrification of railroads. The railroads we now have must do more work and do it more economically. A wonderful piece of apparatus is the modern steam locomotive, but it has well recognized limitations. Sufficient railroad electrification already has been completed to show us its possibilities, and with the development that will naturally come from increased work of this kind its success is assured.

Though the electric railway locomotive so far has

been limited in its application to unusual or severe conditions, it has made good and will continue to do so increasingly as time goes on. This change in the manner of operating railroads will modify the coal industry profoundly. Coal is an expensive item in the operation of the common carriers, and the supply of railroad fuel is an important part of the coal business. Where it is available and conditions warrant its use, water power will be developed which will displace that part of the locomotive fuel that is now being hauled long distances, reducing the tonnage thus consumed not only by the quantity of coal thus displaced but also by that further quantity which is consumed in the transportation of such coal.

Coal that for various reasons is now considered unsuitable for locomotive fuel can be economically burned in large central stations. The firebox of a locomotive has certain well-defined limits, but the combustion chambers under stationary boilers can be designed to burn any kind of fuel having heat value.

This may mean the development of mines not now considered workable, as entirely new economic conditions will be brought about. It is reasonable to assume that the concentration of power-producing centers will admit of the recovery of valuable byproducts, only that part of the coal having no byproduct content being burned. Much of this content, though not suited to the needs of the chemist, has high calorific value.

BYPRODUCT PLANT AT EVERY POWER-HOUSE DOOR

The power plant of the future will embody a byproduct plant just as do the steel plants of today. This, however, will be built along somewhat different lines from those now in use, as the requirements will not be the same. The coke or residue after distillation need not possess metallurgical characteristics, heating value alone being the important consideration.

Coals now considered unsuitable for use at steel plants because their coke is not regarded with favor can be used at power plants after having given up their byproducts. Furthermore, lignites or low-grade coals that are not suitable for locomotive fuel or that cannot be transported profitably will then be of value, for they will be found to give satisfactory service when used directly under stationary boilers.

The ordinary steam locomotive necessarily is more

*Consulting engineer.

wasteful in the generation of power than the large central station because of high radiation losses and the inherent inability of the machine to convert any large percentage of the heat produced into useful energy. It is true that with electric currents certain losses occur in transmission, but the reduced cost of transportation, distribution and handling of fuel for locomotives more than compensates for these.

All these phases of railroad electrification have a direct bearing on the coal industry of the future. Because of the utilization of available water power, energy will be supplied in certain districts without resorting to the combustion of fuel. Because of the great increase in efficiency arising from the burning of coal in large central plants one ton in such a station will do the work of two when burned in a locomotive. Further, the burning of fuel in a central plant permits of the recovery of valuable byproducts not now available.

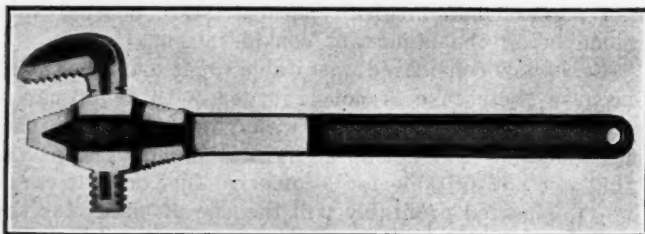
The entire aspect of the coal industry, in so far as railroad fuel is concerned, will undergo a marked change because of the centralization of coal-consuming plants in such locations as naturally offer lowest energy-production costs. Instead of coaling stations being distributed at many points throughout the country, coal used to supply energy for railroad operation will be centralized at a relatively few favorably located centers. Fuel that is now used exclusively by railroads may never reach any of the stations that in future will supply them with power.

While the changes outlined will, no doubt, be gradual, the time when all important lines of railroad will be electrically operated may truly be considered as being by no means remote unless some other now unknown solution for this problem should present itself. With this changed condition will come corresponding alterations in the marketing of a large percentage of the coal produced throughout the country.

Three-Part Pipe Wrench of Great Strength Light Weight and Ease of Application

A NEW pipe wrench embodying a radical change in design from usually accepted standards as well as several original details in construction is known as the Little Giant. It has the end opening that has been so long and favorably known and utilized in machinists' wrenches. This allows the tool to be utilized in much closer quarters than the side-opening wrench.

This new tool consists of three parts only: the frame, the movable jaw and the adjusting nut. The first two pieces mentioned are drop-forged and heat-treated. In the smaller sizes the combined handle and jaw is made with two pipe-gripping faces; in the larger sizes four such faces are provided. All springs, rivets, pins and the like have been eliminated, with the result that the



PIPE WRENCH PROVIDED WITH AN END OPENING
This wrench has only three parts—frame, movable jaw and adjusting nut. Springs, rivets and pins have been eliminated making the tool simpler and lighter.

weight of the tool is appreciably less than that of a wrench of the side-opening type.

Despite its comparatively light weight this wrench is unusually strong. The 14-in. size has repeatedly withstood stresses exceeding 4,700 in.-lb. without either slipping or bending. Government specifications for tools of this size require that they shall withstand only 2,800 in.-lb. The two or four sets of what might be termed stationary jaws or those integral with the handle may be engaged at the option of the user and lengthen the life of the tool almost in proportion to their number. The inner or secondary main jaws render the wrench highly efficacious on certain classes of work.

This new wrench is the product of the Greenfield Tap & Die Corporation, of Greenfield, Mass. The 8-, 10- and 14-in. sizes are already manufactured, and 18- and 24-in. sizes soon will be obtainable.

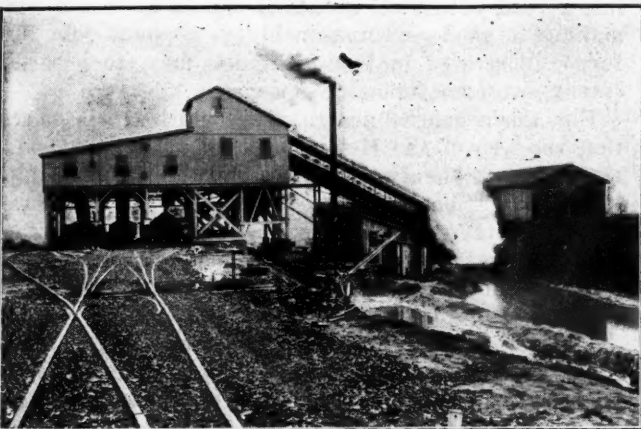
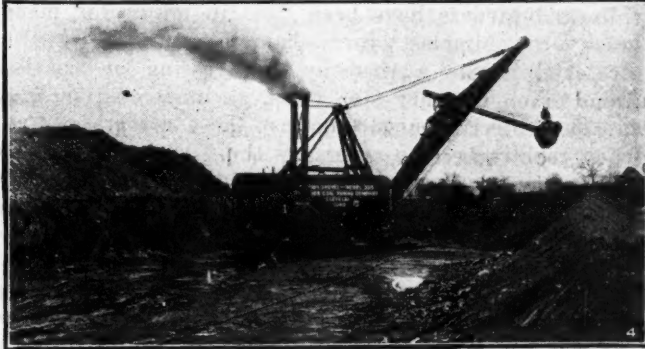
Stripping Methods That Afford Clean Coal

COAL is in general about as clean as the mining methods in use make it. Of course some coal is naturally dirty, but other coal is made dirty by negligent handling. There is no reason why strip-pit coal should be dirty. Unfortunately this type of working had its greatest development during a coal boom and in consequence even the most elementary precautions were not taken by some operators to keep the product clean, for quality then was less sought than quantity. The coal shovel was permitted to dig into the bottom; cover was allowed to fall down on the coal and was not removed from it before loading; the coal shovel loaded coal direct into the railroad car and no picking tables were provided. The result could not be in doubt. Stripped coal was in consequence regarded as being a poor purchase.

With care open-cut coal can be produced that is freer from impurities than that obtained underground. Not infrequently in a mine does the mining machine work its way into the coal bottom and the drawslate fall into the coal. Furthermore the cutting machine breaks up a large part of the coal and shooting tends to reduce what remains from lump to slack.

An open-cut mine like that of the Enos Coal Mining Co., in the Ayrshire coal district of Pike County, Indiana, illustrated herewith, avoids these difficulties of underground mining by lifting the overburden and cleaning the upper surface of the coal by hand shovels and wire brooms before the coal is disturbed, also by not attempting to shovel the coal down to the bottom clay, by shooting with due care and by running the coal over a picking table, where it is examined and cleaned by several men. The coal finally is delivered to the cars from the chute and an inspector watches it from a platform as it falls and certifies the coal as clean if it meets with his approval.

The screenings delivered at this mine are unusually large, about 65 per cent being 2-in. nut and practically none of it fine enough to be designated as "bug dust." This mine is typical of the newer operations in southern Indiana. It is connected with the Southern Ry. by ten miles of railroad owned and operated by the coal company. It will soon be connected also with the Big Four. The property was not acquired until May of last year and the first coal was loaded over the tipple in October. Before the strike the production reached 50,000 tons per month. This tipple can handle 3,500 tons in eight hours.



ENOS COAL MINING CO.'S STRIPPING, THE LARGEST STRIP PIT IN THE STATE OF INDIANA

Fig. 1 shows a steam-driven stripping shovel, one of the largest made, removing the overburden from the coal; Fig. 2, the portable pump by which local dips are freed of water; Fig. 3, a trip of seven dump cars on the way to the tipple; Fig. 4, another of the big stripping shovels also a steam-driven unit; Fig. 5, the dump house, coal conveyor shed and tipple; Fig. 6, loading coal with a caterpillar shovel into cars on a track laid on the top of the coal; Fig. 7, the two picking tables, one for large and one for small coal, and Fig. 8, cars loaded with coal under tipple. Note loading boom to reduce breakage.

Roadway and Other Permanent Supports in Coal Mines of Great Britain*

Horseshoe Sets Coming Into Disfavor Owing to Weakness at The Crown and Often at the Ground—Methods of Stiffening Weak Points—Extruded Fireclay Often Breaks Invert Arch

By JOHN ROBERTS

THE steel "timbering" used on roadways, either alone or in conjunction with timber or masonry, may be termed semi-permanent supports. Steel rails and girders have been used in mines for many years, the simplest form being a rail or girder stretched across a roadway and resting on wooden props or on masonry side walls, as illustrated in Fig. 1. The objection urged against these girders is that when repairs become necessary the girders are not so easily taken out as are timber "collars." On the other hand, they possess the advantage of greater strength and durability, and when once bent and removed they can be straightened for further service.

In Fig. 2 is shown a system in which a steel rail is supported on cast-iron posts. The posts are hollow and flanged at the ends, and cast-iron chairs fit into the upper ends. These chairs serve to support the horizontal rail on which the timber lagging is set. This system is, of course, suitable only where roof pressure alone is expected.

To resist pressure from both roof and sides the steel sets shown in Fig. 3 have been adopted. The crossbar *a* is of I-section and is supported by legs, each of which consists of two channel-bars bolted together and resting on a cast-iron shoe, *b*. The legs and collars are provided with several bolt-holes so that the sets may be adjusted to suit roads of varying dimensions. The desired batter of the legs is obtained by means of the cast iron shoe *b*, the underside of which is curved and rests in a sole piece, *c*. In another form (Fig. 4) the legs and beam are secured by means of angle irons and bolts or rivets.

HORSESHOE LINING SET WITH FLOOR PIECE

Where the roof, sides and floor require support, the form shown in Fig. 5 has been applied. These sets consist of rails bent to the form of the roadway and fishplated as shown. With timber lagging, well packed behind with fine material, this device gives excellent support.

A type of steel set which has become quite popular in recent years, although first used many years ago, is that known as the "horseshoe" set, which consists simply of rails of uniform section bent to the form of a horseshoe and fishplated at the crown, as shown in Fig. 6. These sets are often used in conjunction with masonry and timber, side walls conforming to the rails being built up to a height of about 6 ft. and the upper sections lagged with timber.

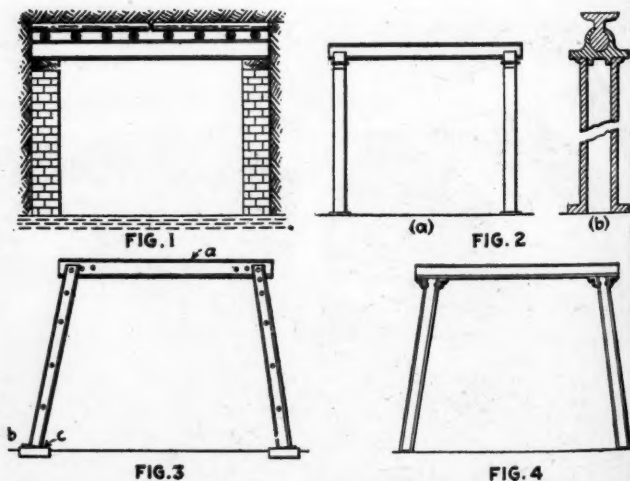
When newly erected the construction presents a neat appearance, but the system can hardly be said to give

satisfaction. In the first place, objection is taken to the weak joint at the crown of the arch, which is the point where great strength is required. Again the curved form of the sides has a tendency to cause the floor to "heave" or "puck." Generally speaking, the effect on the sets is either to cause the crown to be bent downward or to be driven up into the roof and to break the fishplates. Buckling frequently occurs also at the haunches.

Where a horseshoe set of uniform section is placed to withstand unequal pressures at different points, such premature buckling is only to be expected, and it is somewhat surprising to find that horseshoe sets have hitherto not been specially designed to offer increased support at the points where the maximum pressure is expected. If it is considered advisable to line a road with steel arches it should be worth while making a good and reasonably permanent job. The forms illustrated in Figs. 7 and 8 may, to a certain extent, overcome these objections.

Fig. 7 is a general design, from which it will be seen that the web of the H-section supports is expanded at the crown *a*, the two members forming a unit interlock at *b*. Specially-shaped and long fishplates are used, and these are secured by six bolts of suitable strength. At the haunches, *c*, a double flange and web provides additional support, which resists the tendency to collapse prematurely at these points.

The lower ends of the sides of each unit are so formed that the advantage of the arch-shaped structure is retained. The additional vertical struts or sup-



WHERE LITTLE SIDE THRUST IS TO BE APPREHENDED

Fig. 1—Steel rail or girder resting on brick or stone walls with transverse and longitudinal lagging. Fig. 2—Steel rail with the ball of the rail held by a chair which forms a cap to a hollow cast-iron post having flanged base; (a) side view; (b) end section. Fig. 3—Steel set with I-beam crossbar and two legs each of which consist of two channel bars bolted together and resting in an iron shoe (b), under which is a sole piece (c). Fig. 4—Steel set with legs attached to crossbeam by angle irons and bolts or rivets.

*Second part of paper entitled "The Development of Metal Supports for Mines," read before the North of England Institute of Mining and Mechanical Engineers, Newcastle-on-Tyne, England. The first part, entitled "Steel Props Furnish Recoverable, Quickly Set and Self-Adjusting Supports for Mine Roof," appeared in the issue of Aug. 3.

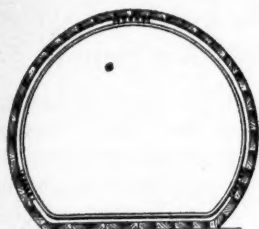


FIG. 5

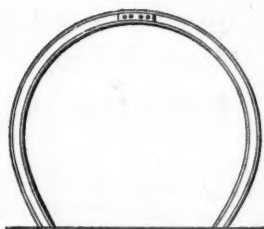


FIG. 6

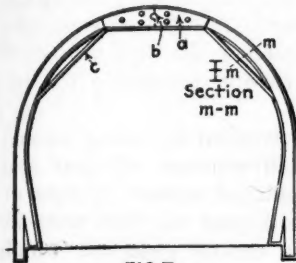


FIG. 7

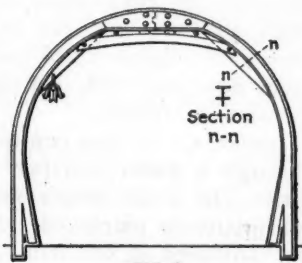


FIG. 8

HORSESHOE SUPPORTS WITH MODIFICATIONS

Fig. 5—Horseshoe with steel base consists of three curved members with a fishplate at the crown and sides. This section is weak at the crown and haunches. Fig. 6—Simple horseshoe fished at the crown, giving no resistance to heaving. This gives greater resistance to side pressures. If the floor heaves, less damage is done to arch. Fig. 7—An improved horseshoe set with better footing, stronger roof supports and more support at the haunches. The increased supports also strengthen the arch against side thrust. Fig. 8—Still stronger horseshoe with strengthening web. Holes are drilled for the web, and it is added only if the arch shows signs of failure. The web has no flange.

ports provided are adapted to take the major portion of the stresses acting on the roof of the structure, while inwardly curved side members serve to resist the tendency to buckle. This will be obvious from the fact that by fixing the foot of each arm in a notch in the floor, as at *d*, each member is converted from a cantilever (viewed sidewise) into a beam fixed at both ends.

Failure usually takes place above the spring of the arch, while the sides often remain intact; therefore increased strength must be provided at the crown and haunches. The points near the ends of the fishplates will, at first sight, appear relatively weak, but it should be noted that the sharp arched flanges at these points offer much resistance to the pressure; in fact, this form closely resembles the five-piece set which in some fields is used to replace the more general set of only three pieces. When drawn diagrammatically, as in Figs. 9 and 10, the resemblance between the two systems of reinforcement is striking.

In Fig. 8 is shown a slightly modified form of horseshoe set in which a strengthening web (without a flange) is used. Holes are provided to enable a reinforcing strut to be bolted on as soon as the arch shows signs of failure. Cables or haulage pulleys may be suspended from holes lower in the web, thus obviating the fixing up of crossbars for this purpose.

It is highly important that the sets be well packed behind, so that the pressure may be distributed evenly. Particular attention should be paid to this requirement at the crown, otherwise the supports will be driven up into the roof. Failure often occurs also at manholes, as the result of improper packing, and to prevent this it is generally desirable to wall the sides of the manholes behind the steel sets. When the floor also requires support a tie may be stretched under the track and joined to the base of each member. The employment of wooden blocks under the feet of the supports is generally recommended, and where the feet are "stamped" some fine material should be placed in

the holes so as to allow the structure to yield slightly to the load until settlement takes place.

It is realized that the manufacture of the suggested new designs will not be such a simple matter as that of plain horseshoe sections. There is, however, the alternative of using double-channel sections, held together not only by bolts but also by plates extending across the crown and haunches. These fishplates would give the necessary additional support to the roof (Fig. 11).

Other supports may be regarded as permanent. The distinction between permanent and semi-permanent is perhaps arbitrary, for in mines where little pressure is encountered the most simple form of timbering may last a lifetime, whereas in others elaborate and costly systems of reinforced concrete may have a comparatively short life. Speaking generally, however, masonry and "ferro-concrete" are regarded as permanent structures. The masonry arch reinforced with steel girders, illustrated in Fig. 12, has given good results. In this example ordinary masonry sidewalls were erected, and arched girders weighing 56 lb. per foot were placed in position about 6 ft. apart and resting on the walls. The masonry then was continued about and between the girders.

Ever since the introduction of concrete as a roof support for mines it has been the practice to reinforce it with metal in a more or less systematic manner. Formerly it was the custom to use old rails or any strips of metal to provide the necessary tensile strength. Reinforcement to be effective, however, must be carried out systematically, and this, as a rule, is now being done.

Engine rooms have frequently been constructed in the manner shown in Fig. 13, where old rails are bent to the required form and then fishplated. The concrete is well rammed behind the rails and the exposed surface is smoothed off to prevent, as far as possible, the accumulation of dust and to facilitate its removal. Such a structure possesses the advantage of having no inflammable material in its construction and com-

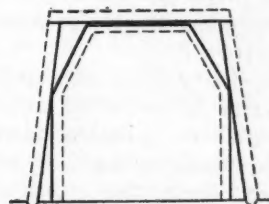


FIG. 9

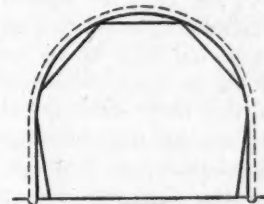


FIG. 10

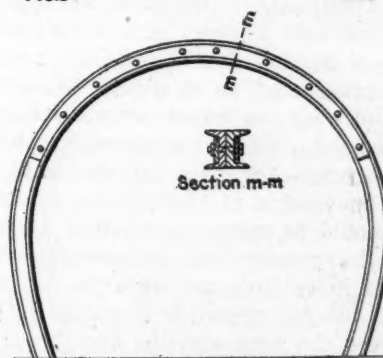


FIG. 11

SHOWS SIMILARITY OF HORSESHOE ARCH TO TIMBER AND STEEL SETS BUILT TO RESIST THRUST

Fig. 9—Diagrammatic sketch of reinforced-timber set. Fig. 10—Diagrammatic sketch of steel arch. Fig. 11—Horseshoe arch of two channels back to back strengthened by long fishplates on each side which reinforce crown and haunches.

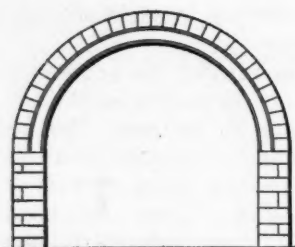


FIG. 12

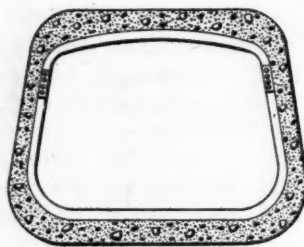


FIG. 13



FIG. 14

STILL MORE PERMANENT ROOF AND SIDE SUPPORTS

Fig. 12—Masonry arch reinforced with steel girders. Fig. 13—Old rails backed by concrete used in construction of engine room. Fig. 14—Heavy steel-girder rings for resisting pressure on main roads. These also are backed with concrete.

mends itself where electrical apparatus is installed.

To cope with heavy pressure on insets and main roads heavy steel-girder rings measuring 12 x 6 in. in section and embedded in concrete have been applied. They are made in three segments, which are secured at the joints by fishplates and bolts (Fig. 14). In ground that is fairly well settled the interval between the rings may be 3 ft. or thereabouts, but with a bad roof it may have to be reduced to 18 in. from center to center. A minimum thickness of 18 in. of concrete would be used with girders of the above section. At junctions of branch roads the interval between the rings would be bridged with straight girders or old rails. All cavities should be filled up with concrete or brickwork, or, if this is impracticable, the reinforcement would need to be strengthened.

If, as is generally the case, the roof is expected to give the most trouble, this can be provided against by strengthening the rings with long fishplates similar to those shown in Fig. 11. On the other hand, in some cases the "invert" has failed where the crown has been little disturbed. Such cases are likely to arise when a bed of soft fire-clay interstratified with hard rock occurs at a great depth, as the soft bed is forced out with a pressure that is almost irresistible. Here the maximum strength would naturally be provided at the floor, the fishplates being placed on the lower section of the rings for this purpose. By whichever method the movement of the soft fireclay is controlled provision should be made, if possible, to tap the fire-clay either by constructing a passageway behind or by means of holes through the arch. It may also be advisable to use compressible material, such as brushwood, between the arch and the clay, so as to produce a cushioning effect.

An important advantage of steel and iron supports is that they can be made of any desired shape and size to suit any given conditions. Some degree of standardization should, however, be attempted.

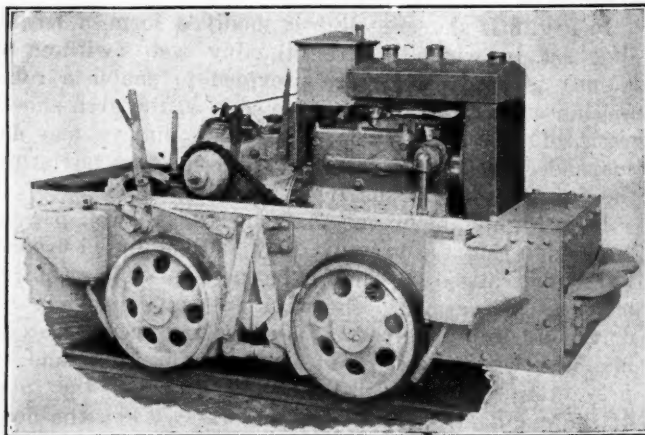
Gasoline Locomotive with Tractor Type of Motor Having Clarified Air Supply

IN ORDER to meet the demand for a gasoline locomotive that would be dependable for light haulage service and that could be made at reasonable cost the machine shown in the accompanying illustration has been developed. This is a substantial locomotive built to withstand severe service. The motor is of the tractor type, the ruggedness of which has been thoroughly demonstrated. All engine parts in this design are thoroughly inclosed and consequently are well protected from dust and dirt, yet are readily accessible for inspection or repair.

Intake air to this engine is washed by being passed through a water clarifier which removes all dust and dirt. The usual simple and efficient splash system of lubrication is employed. All oil used for this purpose is introduced at one point in a central reservoir which supplies all parts of the motor and transmission assuring ample lubrication.

The clutch is placed behind and adjacent to the fly-wheel and the propeller shaft at its extremity carries a bevel pinion that is in constant mesh with two bevel gears, causing them to rotate in opposite directions. Forward or reverse movement is obtained by engaging either one or the other of these bevel gears by means of a sliding clutch. A neutral position, of course, is provided also. From the bevel-gear shaft drive is made through a spur gear reduction to a jack shaft on the extremities of which are mounted sprockets which connect with the axles through roller chains.

Changes of speed are obtained by throttle control similar in operation to that of a steam locomotive. All levers are grouped within easy reach of the operator. Cast-iron wheels are standard equipment but steel or steel-tired wheels as well as a cab can be provided. The weight is about 4,000 lb.; the minimum radius of curve that can be traversed is 13 ft. and the speed may be anything up to 8 miles per hour. The track gage is 24 in. or more and the height is 54 in. without cab. Assuming a car resistance of 30 lb. per ton of trip weight this locomotive, which is manufactured by the Atlas Car & Manufacturing Co., of Cleveland, Ohio, will haul a 25-ton trip on a level track, 9 tons up a 2-per cent or 2 tons up a 7-per cent grade.



GASOLINE LOCOMOTIVE FOR HAULAGE AT COLLIERIES

A 2-ton locomotive for light service, that can be used on 13-ft. radius curves and with a 24-in. track gage. It has hand brakes, renewable shoes and hand-operated sanders. The frame is of structural steel.

Can Mechanical Replace Human Energy in Underground Loading?



Human Effort in Coal Loading Costs \$10,000 a Year per Horse-Power and Almost Ten Dollars per Kilowatt-Hour—Working Efficiency Roughly 2½ per Cent—Cars Changed in 1½ Minutes

AT A RECENT meeting of the Engineers' Society of Western Pennsylvania J. F. Joy read a paper on "The Substitution of Mechanical Energy for human Energy in Underground Mining," of which an abstract follows:

"One of the largest items of expense in the production of coal is incurred in its loading out at the face of the workings. The annual production in the United States, which totals more than 500,000,000 tons, is loaded at the face by approximately 400,000 mine workers out of the 750,000 employed. It is evident, therefore, that this operation absorbs the greater part of the labor employed in the mining of coal.

"It is said that a man at work will through an eight-hour shift develop one-tenth of a horsepower, so that for 400,000 miners the power equivalent is 40,000 hp. Converting this value to kilowatt-hours and allowing 200 working days per year, the work equivalent resolves itself into 47,744,000 kw-hr. With a daily wage of \$5 it will be seen that the loading process costs the coal industry \$400,000,000 per year or \$10,000 a year for each horsepower.

PAY FIVE-HUNDRED TIMES TOO MUCH FOR ENERGY

"Similarly the work costs almost \$10 per kilowatt-hour, or four to five hundred times the cost of electrical energy. Because men can perform tasks like these only at enormous cost, engineers are providing means to convert electrical energy into mechanical work, in such a way as to effect greater economy.

"The question of efficiencies must be taken into account in making the comparisons. Assuming that the coal is loose the greater part of the 40,000 hp. is spent in raising it, let us say, 3.3 ft., which is a fair average for the difference in level between the mine floor and the top of the car. In lifting 500,000,000 tons of coal through this distance only 1,000 hp. is consumed, and the resulting efficiency is 2½ per cent. Most of the miner's time is spent in dislodging the coal preparatory to loading, in timbering, laying track, etc., but, regardless of the work incurred in these operations, the efficiency is lowered because he must stoop and erect himself for each shovelful of coal.

"The supplanting of hand labor at the face by machinery has been the aim of a number of engineers for a score or more of years. Progressive mining companies have encouraged this and interested themselves

in the project and millions of dollars must have been spent in experimentation. As a result, many different machines, involving a variety of principles, have been devised and operated. Many of these machines work admirably when loading loose coal but have been unsuccessful in loading coal in the semidisturbed state as it exists at the working face after blasting. To meet this difficulty the man who loads by hand not only has a shovel to lift the coal but provides himself with two picks to loosen it, and excessive quantities of powder have been resorted to in some cases.

"Although it has the desired effect—that of producing an easily loaded coal—a loss results instead of a saving, inasmuch as the coal is shattered. Many of the machines were not designed in keeping with the prevalent system of mining. To make conditions more suitable to the handling of a particular type of machine the cry has been raised to supplant the room-and-pillar system by one of the many wall systems.

"It is safe to assume that 98 per cent of the yearly production of coal in this country is mined by means of the room-and-pillar system; the method of working has been adopted after years of study and experience on the part of the operators, so that today it is considered the most practical and economical means of winning coal. In the early development of this method many lives and much money were lost, so that it would be incongruous to consider a different system of working at this time."

A LOADER BOTH PROPS AND RUNS MACHINE

In the discussion that followed E. H. Cox, general manager of the Snowden Coke Co., inquired whether the runner of the one-man loader set the timbers as well as operated the machine, and Mr. Joy replied that it did. Some doubt was expressed as to the practicability of such practice.

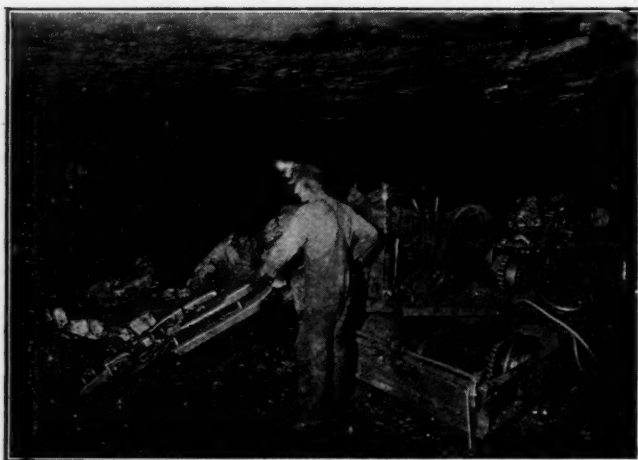
Mr. Cox then told of a loader that was developed and tried in one of the mines of the Pocahontas Fuel Co. several years ago. Mr. Newdick, who developed this machine, was in the audience. The loader was manned by four men in addition to the operative. The seam being mined was the Pocahontas No. 3, which varies in thickness from 8 to 10 ft. Two motors were used for pulling cars to and from the room face, two 3-ton cars to a trip. Breakthroughs were established at 100-ft. intervals, and in this way two motors could ply back

and forth without interference, one working on the straight and the other from the nearest breakthrough. In this manner it was said that a car could be loaded and moved in $4\frac{1}{2}$ minutes, or at the rate of one ton per minute, allowing $1\frac{1}{2}$ minutes as the average time for changing cars.

Mr. Newdick afterwards stated that much time is lost in car shifting, even in the best regulated system; investigation at the mine mentioned proved that on the days of maximum loading the loader was in actual operation not more than 42 per cent of the time; with most favorable conditions and using two motors as cited, much time was lost. The time actually occupied in moving from one room to another with only 60 ft. between centers, traveling the nearest breakthrough, totaled approximately 4 minutes. This time did not allow for delays due to derailments and other accidents. An instance was mentioned where a Meyers-Whaley loader disposed of all the coal from one cut in eight $3\frac{1}{2}$ -ton cars (loading time not given), with an average time of changing cars of $1\frac{1}{2}$ minutes. This shifting time agrees closely with that given by Mr. Cox, which was $1\frac{1}{2}$ minutes.

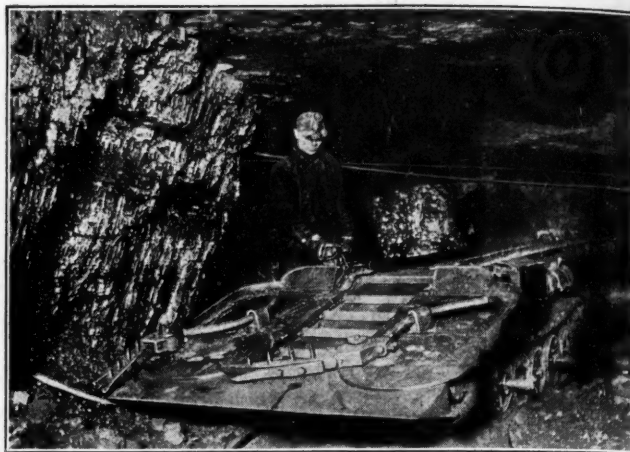
The question was raised whether it is not disadvantageous to use a rigid conveyor on a machine mounted on a caterpillar tractor, in that the discharge end of the conveyor moves away from the car when swinging around for more coal. Mr. Joy was asked also whether his type of loader necessitated continual car spotting. To the first question he replied that with the proper manipulation by a skilled runner the discharge point of the rigid conveyor could always be kept over the car and that the rigid conveyor means simplicity in both design and operation. In answer to the second question he said that the conveyor extends over practically the entire length of the car, loading progressively forward, so that the loader and not the car is moved.

To an inquiry made by Mr. Cox as to the day-in and day-out output of the one-man loader Mr. Joy gave figures of a case where a 3-ft. seam was being worked. In two successive weeks one machine loaded an average of 52 tons in eight hours. In the two weeks that followed this period the average daily output amounted to 60 tons. The operator, he said, claimed a saving of 25c. per ton of coal loaded.



LOADING COAL WITH JOY LOADER

Coal gathered by the machine with the aid of only one attendant. Note the large lumps which are torn from the pile, carried up the conveyor and deposited in the car. The illustration appearing in the title of the article shows a car that has been filled with large lumps by the machine.



DEVICE FOR GATHERING COAL TO CONVEYOR

A wide sloping plate is thrust toward the coal which the two fingers gather and sweep onto the conveyor by which the coal is carried back to the waiting car in the rear.

Mr. Eavenson asked if the loading could be reduced to man-hours per ton of coal, so that a person might figure out his own costs regardless of varying wage scales in the different fields. Such figures were not available at the time, but some interesting facts were given in reply. In the 3-ft. seam already mentioned approximately 12c. was allowed for cutting and 8c. for blasting per ton of coal. One loader operative, a mule and driver had an output daily of from 50 to 60 tons. The tonnage came from three working places; there were only nineteen working places in this mine at the time, and it is the ultimate object of the company to have not more than thirty working places throughout the life of the mine. The company asserts that the number of men on the payroll, exclusive of the men on the loaders, is lessened by one-third due to the concentration of workings.

Mr. Weldin asked Mr. Joy if he had decided to cease manufacturing the high-seam loader. The latter replied that in 1917 and 1918 the Pittsburgh Coal Co. used this type of machine in one of its mines, and produced 100 tons per day, loading slightly less than two tons in two minutes. However, he felt that the smaller one-man loader is more practical for the present at least and that the large machine was beyond the economic limit of present-day requirements.

Mr. Eavenson asserted that his observations led him to believe that the actual working time of a mechanical loader does not exceed 35 per cent. Consequently the greatest difficulty in the adoption of the mechanical loader cannot be ascribed to the loading machines thus far developed but rather to the inadequacy of the schemes of car handling. A successful method of car supply to the face must be worked out before the industry can hope for real success. He also asserted that with an adequate car supply, even a hand loader could almost double his daily output.

He was of the notion that pillars could be drawn more safely, more quickly and with an appreciable saving by means of mechanical loading. Because of the rapidity of mechanical loading the retreat would be so swift as to occasion little menace due to the roof, which would not cave so close to the rib end as it does in the present method of mining. Not only that, but there would be less slate to contend with and mining costs unquestionably would be decreased.

Mr. Joy said that there could be no doubt as to the advantages of the mechanical loader for pillar work. Returning to face loading, he said that in the mine of the Pittsburgh Coal Co. to which reference was made the roof was weak. An I-beam supported at both ends by wooden posts was maintained two or three cuts away from the face, being moved every other day. This provision and the practice of placing the regular timbering closer to the face greatly assisted in insuring safety.

He then mentioned an experiment made in a mine where the mechanical loader was used in wall mining. Entries were driven on 300-ft. centers. A wall cut to a depth of 7 ft. was made, with the track placed 7 ft. from the wall, or 14 ft. from the solid coal. Posts were placed on the opposite side of the track. With this arrangement the loader worked admirably.

At this point Mr. Coxe expressed his surprise that a flame-proof motor had not been developed for loading machines. Unless a safe motor were developed the mechanical loader seldom would be used in gaseous mines. F. A. Barry, of the Westinghouse Electric Co., said that manufacturers had given little thought to such a motor, inasmuch as the present demand did not warrant the cost of its development. Such a motor would require a marked change in design. Mr. Joy added that not only must a motor be developed to exclude gas from its interior but that the controller and the resistance must be protected similarly.

Healey River a New Coal Field in Alaska With Seven to Forty-Six Foot Coal

THE Secretary of the Interior has authorized the immediate construction of trackage connections between the Alaska R.R. and the coal mines recently developed on the Healey River. By constructing a spur four miles in length cheap fuel will be made available to Fairbanks and the mining region tributary to it. The successful development of coal on the Healey River promises to stimulate mining in the Fairbanks region more than any other event in recent years. Even at present, without trackage connections, with all the expense entailed by having to haul the coal four miles to the railroad, unload it at the Nenana River, ferry it

across and reload it on cars on the other side of the river, this coal is being laid down in Fairbanks at \$8 per ton. With the completion of the Nenana River bridge this winter, and with the establishment of through traffic, Fairbanks will have all the advantages of cheap fuel.

Until the Healey River coal became available the Fairbanks district was dependent largely upon wood for its fuel. Prices last winter were as high as \$24 a cord. Even the largest consumers paid \$12 a cord on contracts. At such prices no serious efforts were made to thaw ground or even to operate dredges on a large scale. The cost of power prevented the development of large areas of promising placer ground of moderate value.

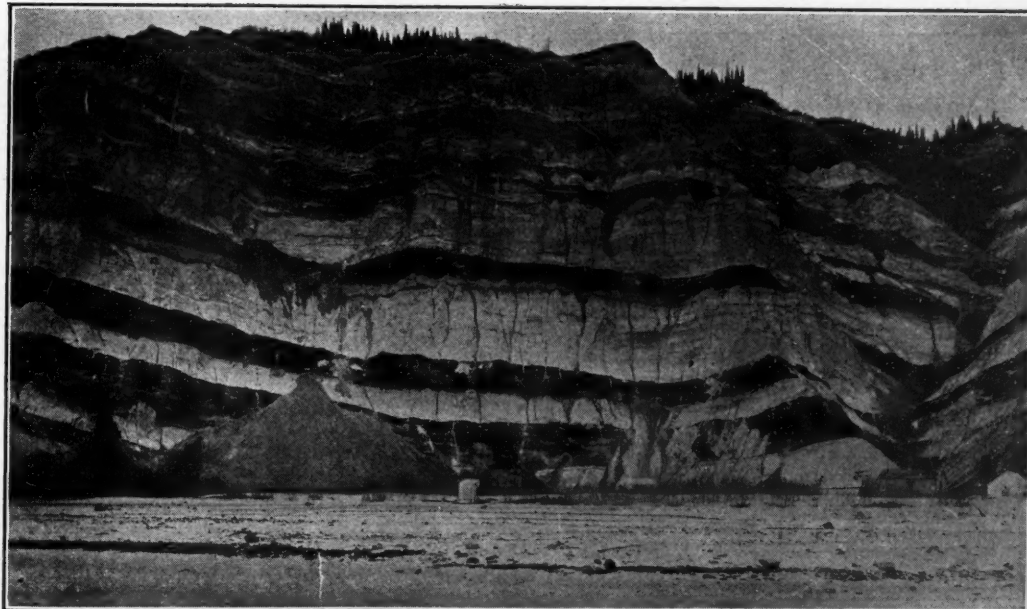
The coming of the railroad already has cut down the cost of miscellaneous supplies at Fairbanks by one-third. Now, with the assurance of a dependable supply of satisfactory fuel, it will be possible to undertake both lode and placer mining on a scale which costs have made impossible in the past.

What is true of the Fairbanks district will apply in a slightly different degree to all points along the inland rivers, as coal can be delivered by barge from Nenana at prices much below what hitherto has been paid.

Contracts have been let by the Healey River Coal Corporation for driving a 1,200-ft. main adit which will open a series of coal beds which vary from 7 to 46 ft. in thickness. The coal is a fair grade of sub-bituminous and already is being used extensively for railroad, industrial and domestic use. Steam-boiler tests have been made at Anchorage by John A. Davis, of the Bureau of Mines staff, which show that the Healey River coal has 90 per cent of the efficiency of that obtained from the bituminous coal of the Matanuska field. The corporation engaged in the mining enterprise is being financed and conducted by local men familiar with conditions in Alaska. Only within the last year has it been appreciated that this coal, which occurs near the lignite deposits in the Nenana fields, is not itself a lignite but is of a distinctly better grade. The failure to recognize its quality explains the delay in developing this resource which is expected to play an important part in developing the Fairbanks district.

Outcrops at Healey Forks, Alaska

Careful scrutiny will show a black dump with a coal chute resting on it to the left of the picture, the opening being in the thick bed. Another entry appears in the center at the foot of the same big seam, and on the extreme right is another chute, the drift in the coal which serves it not being visible. Here are apparently six seams, some quite irregular but one unusually thick. In fact the coal, which is subbituminous, measures in places 46 ft. in thickness.



Two-Unit Automatic Mine Substation Erected to Improve Service and Reduce Mining Cost

Surface Substation Runs Without Attendant — Second Motor-Generator Set Not Put Out of Operation Unless for Fully 10 Min. First Set Has Been Adequate, a Short Level Road Making 6-Min. Low Load Frequent

BY H. F. RANDOLPH AND C. E. H. VON SOTHEN

A REMARKABLE increase in the use of automatic substations in mining service has been noticeable during the last year. Motor generators and synchronous converters have been installed with control devices that permit them to operate with perfect safety even though unattended. Infrequent inspections only are necessary. Because of the elimination of the human element and the possibility of more advantageous location, such stations have been able to afford a quality of service better than that rendered by the ordinary manually-operated mining substation and as good as that of the best.

One of the most interesting installations recently put in operation is the two-unit synchronous motor-generator automatic substation of the Star Coal & Coke Co. at Red Star, W. Va. This company recently undertook a general electrification program which involved the installation of General Electric Co. transformers, induction motors for pumps, tippie and fans, an induction hoist motor with magnetic control, and the automatic substation just mentioned.

This substation is situated on the surface about a mile and a half from the mouth of No. 1 mine. Direct-current at 550 volts is taken down a borehole a distance of 325 ft. to the trolley, which extends approximately 4,500 ft. into the mine in one direction and out through the mine mouth in the opposite direction. From the mine mouth it continues on the surface a few hundred feet, after which it enters No. 2 mine and extends about another mile underground. The present direct-current load consists of one 8-ton and one 10-ton locomotive in No. 1 mine, an 8-ton locomotive in No. 2 mine together with mining machines and gathering pumps.

In No. 1 mine the trips usually consist of twenty 2-ton cars each, except for a short distance where the grade is steep. Here the locomotives pull only eight or ten cars per trip. The loads are brought to the foot of the slope up which they are drawn by the induction-motor hoist over a 7-per cent grade to the mouth, a distance of 5,500 ft. The locomotive in No. 2 mine usually hauls out eight-car trips, the size of trip being such as to bring the full output of the mine to the tippie with as small a demand charge as possible.

Before the new installation was made the haulage system was supplied by two steam-engine-driven direct-current generators. These units have been replaced by the automatic substation, which contains two 150-kw. 500- to 550-volt generators driven by 2,200-volt 3-phase 60-cycle synchronous motors fitted with direct-connected exciters. By making the station automatic it has been possible to place it in the location that will give best voltage at the face, yet minimize attendance charges.

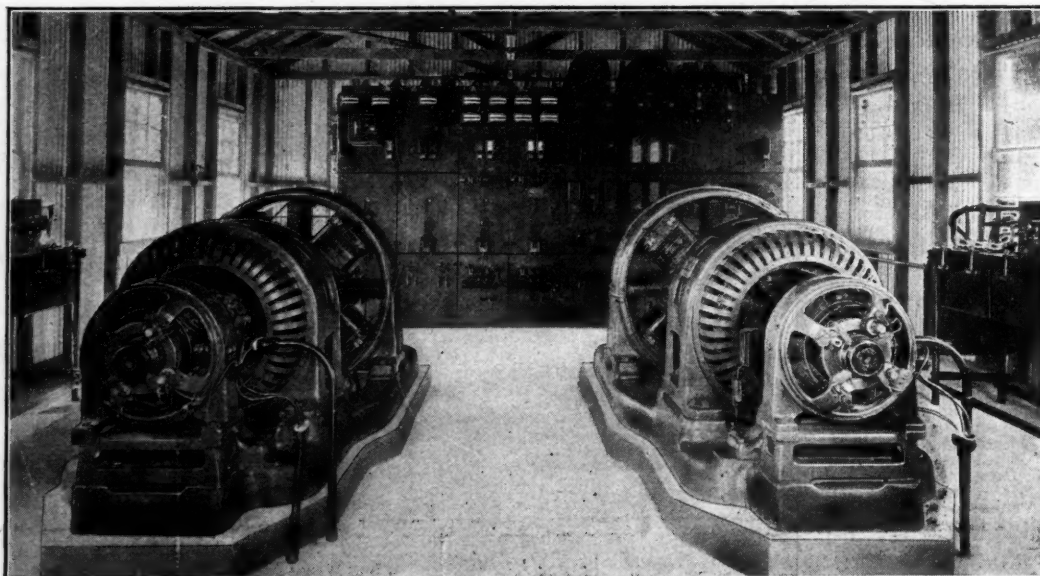
Power is purchased from the Virginia Power Co. Current enters the substation at 2,300 volts through iron conduit laid under the floor. Referring to Fig. 1 the incoming line panel is shown on the extreme left of the switchboard. In addition to indicating meters and overload protection, this panel contains integrating, graphic and demand meters. The alternating current bus connects this panel with the three adjacent ones, which are, in succession, a feeder panel and the two panels that control the synchronous motors. The line from the feeder panel goes to the outside through iron conduit.

Three transformers just outside the station deliver power to the pump motors at 440 volts, the lines being taken down the same borehole as the direct-current

FIG. 1.

Interior View of Substation

Two 150-kw. 500- to 550-volt synchronous-motor generators are installed with every detail of automatic control. Starting on the extreme left of the switchboard the first panel is for incoming current; to the right are a feeder panel, two panels that control the synchronous motors, two that give proper starting sequence and protection, a direct-current panel and one for the relays of the automatic reclosing feeder equipment.



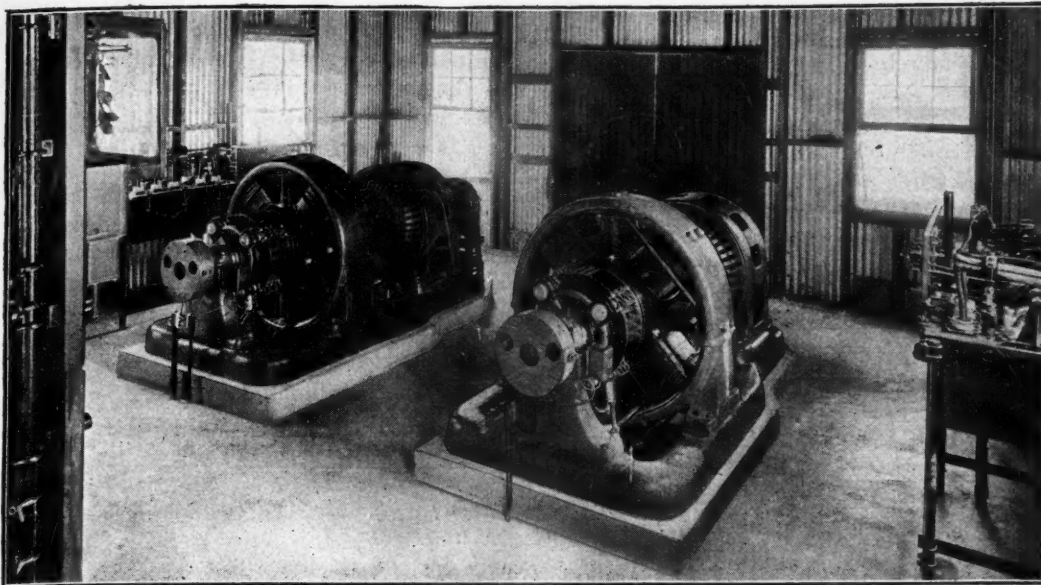


FIG. 2.

Substation that Regulates Itself

Automatic substation of the Star Coal & Coke Co., of Red Star, Fayette County, West Virginia, seen from rear and side of switchboard. This is a view of the room as it normally appears, being occupied solely by the machinery except during inspection. An employee who lives nearby puts it in operation in the morning on his way to work by closing two switches.

lines. The 2,300-volt feeder continues over a pole line to the hoist, the fan, the town-lighting circuit, and to the transformers for the tipple motor and a second small fan. While the incoming line and feeder panels are not necessary for the successful operation of the automatic substation, it was considered desirable to combine them with the automatic switchboard so as to insure alternating current power for the hoist, pumps and fans when the substation is idle.

The remainder of the board consists of two control panels to give proper starting sequence and protection, a direct-current panel containing contactors and circuit breakers for both generators, and, on the extreme right, a panel on which is mounted the relays for the automatic reclosing feeder equipment. The feeder contactor is hung from the pipe framework behind the panel.

OXIDE-FILM ARRESTERS SIDESTEP LIGHTNING

Above the switchboard may be seen the six choke coils used in connection with oxide-film lightning arresters on the incoming line and the alternating-current feeder. The two motor field rheostats and the load-indicating resistor for the automatic reclosing feeder equipment also are visible above the board.

Though it is not the purpose of this article to present a detailed description of the operation and protection of this station a brief discussion of it may be of interest. Normally the station will run only during the day. An employee who lives nearby puts it in operation in the morning on his way to work by closing the two control lever switches on the base of the feeder panel or by closing the two oil circuit breakers. Only one motor-generator set starts at this time, however, a change-over switch determining which one shall lead. Provision has been made so that the station may be arranged for starting and stopping from the tipple office, should this be found desirable.

The starting operations are performed in the same order as in manual operation. In other words, half voltage is impressed on the motor until it reaches synchronous speed, then it is excited, and when the field current has built up to about one-half normal the machine is thrown on the line. The moderate starting peak thus obtained results in only a small demand charge and low cost for power.

In Fig. 1 the master control contactor for each motor-generator set is shown on the base of its control panel. When the incoming voltage is sufficiently high for proper operation and all protective devices are in positions showing normal conditions for automatic starting the master contactor of the first set closes immediately after the indication to start has been given. Fig. 2 illustrates the sets with their oil-immersed starting and running contactors. The starting compensator may be seen in Fig. 1, mounted on the end of the pipe framework that supports the starting and running contactors.

Closure of the master control contactor causes the starting contactor to connect the motor to the line through the starting compensator. Soon after the set reaches synchronous speed the exciter voltage builds up to a predetermined value, whereupon a relay picks up and closes the motor field contactor. This device is shown on the base of the synchronous-motor panel.

When the field contactor closes it opens the discharge resistance, which short-circuits the motor field during acceleration and connects this field to the exciter. As the field current reaches approximately three-fourths of its normal value it picks up a relay which opens the starting contactor and closes the running contactor. This connects the motor directly to the line.

POLARIZED RELAY ASSURES GENERATOR POLARITY

When the voltage is sufficiently high a polarized relay, used to verify the generator polarity, closes its contacts. This completes the circuit to the generator line contactor through auxiliary relays. The line contactor closes and connects the machine to the direct-current bus. One section of the load-indicating resistor is next cut into the feeder circuit so as to bridge the feeder contactor. If no severe overload or short-circuit exists on the feeder its contactor closes after a short but definite time delay. The station is now ready to deliver current.

A current relay in the feeder circuit closes its contacts when the load on the first motor-generator set becomes slightly more than full. If this load is maintained for 30 seconds the second set is started, and in less than half a minute is equalized and on the line, helping out set No. 1. When the load falls off to a point

where set No. 2 is no longer needed and remains below this value for approximately ten minutes, this set is shut down completely, but is ready to come on again whenever required.

The reason for using a time-delay value of ten minutes is as follows: There is a stretch of track in No. 1 mine that is practically level, and while a trip is passing over it the total load on the station falls off appreciably. It takes a trip six or seven minutes to cover this stretch, and it would not be desirable to have the second set shut down, but will restart whenever required.

When the mine has finished for the day the station is shut down by opening the oil circuit breakers or the control switches, whereupon all devices return to the proper position for a restart.

In addition to the devices which insure proper sequence in starting the two motor-generators and putting them on the line, others are provided to protect the machines from any damage that may result from abnormal conditions that arise during operation. Two of these protective features have already been mentioned—namely, the relay to prevent starting on low incoming voltage and that for verifying generator polarity.

These protective devices may be divided into two groups: those affording protection in cases of temporary emergency, permitting resumption of service as soon as conditions return to normal, and those that shut the station down permanently when trouble arises of such a nature that the installation should be inspected or repaired.

In the first group may be placed those devices that protect against single-phase starting, undervoltage on the incoming line, overheated motor windings, overheated load-indicating resistor, direct-current overload and reverse power. The second group comprises the bearing-temperature relays and those devices affording protection against excessive starting time, wrong generator polarity, permanent field failure, overspeed and overload either on the incoming line or upon the two motor circuits. The alternating-current feeder also is provided with overload protection. The general arrangement of the bearing-temperature relays, flash barriers and speed-limit switch may be seen in Fig. 2.

Single-phase protection is so arranged that the station cannot start if one phase is dead, but as soon as three-phase power is available it will automatically go into operation. If single-phase occurs while the set is running it will continue to supply power unless the load is heavy enough to cause the motor windings to overheat. In such a case one of the temperature relays will open the main control contactor and shut the set down. It will restart automatically when the windings cool and three-phase power is supplied. The machine temperature relays are connected to the current transformers and have a heating characteristic similar to that of the motor. The automatic reclosing direct-current feeder equipment already referred to is designed to afford proper protection when either or both machines are running.

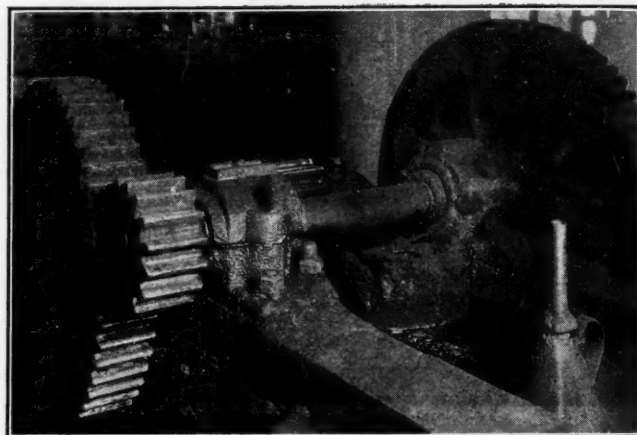
The service obtained from this substation has been highly satisfactory; all operations of the mine have been speeded up, delays greatly reduced both in number and in total time lost, and power costs have been cut beyond expectation. Other conditions remaining the same, it was found that for the first month of operation with the electric equipment the total cost for power was much less than it had been with the steam plant.

This includes the hoist as well as all other apparatus, but the saving in attendance charges on the substation made up a large part of the total. The results obtained clearly justify the increase in investment over that necessary for manually-operated substation.

Dangers Lurk in Unprotected Gears

THIS gear train was found unprotected, as shown, in a headframe of a big mine. Guards are still unusual in tipples. They are making their way in breakers, however. Our mine inspectors rarely examine tipples and would have little authority if they did. But dangers certainly exist in them from the moving parts of machinery, flying coal dust, lack of light and fire.

Fortunately the building itself is fireproof. Even



CORNER IN A TIPPLE WHERE PROTECTION IS NEEDED

Fortunately the exposed gears in a tippie make so much noise that they warn everyone that something is afoot that must be watched and avoided. Fortunately also few men go near the gears of a tippie and those, that do, pass them but infrequently.

then the exposed oil would in this case be no little menace, for the bearings are evidently bolted to wood stringers. With speed reducers the gears and the oil would be kept inclosed and space would be saved.

Gas Blows Out Coal in Granby Mine Faces

BLOW-OUTS have been interfering with the working of the Cassidy, Vancouver Island, mine of the Granby Consolidated Mining & Smelting Co. These occurrences have been more or less frequent for months. Because of them the Minister of Mines some time ago prohibited the use of powder underground. Within the last few weeks they appear to have become more severe, for two miners have lost their lives at different times within this period. In each case they were buried under the fall of coal, and life was extinct before the bodies could be extricated. Coroners' juries have returned verdicts of death by misadventure, no blame being attached to any officials. The situation has developed into a problem of some perplexity both for the department of mines and the company management. The coal in the area now being worked is soft and conditions such that there is no assurance but that blow-outs will continue and that further lives be lost unless something is done to safeguard the workers. William Sloan, the minister of mines, has interested himself in the matter personally to the extent of prohibiting the use of explosives, taking up with the U. S. Bureau of Mines the question of the explosibility of the mine dust, and now, it is understood, has instructed his officials to make full investigation.



Problems of Operating Men

Edited by
James T. Beard



Practical Test Applied to Safety Lamps

Long-Standing Practice in Scotland—Lamps, at Times, Assembled Without Gauzes — Caution Taken by Firebosses to Avoid Danger of Cracking Glass — Need of Expansion Rings

REFERRING to the letter of Joseph Cain, *Coal Age*, July 13, p. 60, I want to congratulate him on the serious view he takes regarding the importance of testing every safety lamp before it is taken into the mine. Most of us will agree that sufficient attention is not given to this matter.

In Scotland where I gained my early experience in mining, the Coal-Mines Regulation Act requires that firemen (firebosses) examine the safety lamps of all men employed in gassy mines. The examination is made at the fireboss station as the men pass in to their work. At the same time, each man is informed of the condition of his working place.

The importance of making this examination of each lamp taken into the mine has long ago been impressed on my mind, through my experience in making such examinations as fireboss, and from the many accidents attributed to defective safety lamps.

PRACTICE IN SCOTLAND

The practice is of long standing in the mines of Scotland. It was the custom, there, to supply every fireboss with a small tin tube, for convenience in blowing around the top and bottom of the glass globes of the lamps. It was nothing unusual for a fireboss to reject as many as five or six lamps in every hundred examined, because of the test showing leakage past the globe.

If any reader doubts that this is an habitual practice in those mines, let him ask a Scotch miner, who has recently come over. Hand him a safety lamp to assemble and he will invariably blow all around the globe, after putting the lamp together lighted and ready for use.

Many a time I have been ridiculed, myself, for this habit, by those who contend that such a small hole would be no larger than those formed by the mesh of the gauze. They seem to forget that the glass globe has no cooling principle like that attributed to wire gauze. Not only would a loosely assembled lamp be unable to withstand a strong blast of air, but it would easily pass flame in an explosive mixture.

As further proof of the importance of examining safety lamps and applying this practical test before taking them into the mine, I have in more than one instance, discovered Marsaut

and Mueseler lamps assembled without gauzes. These lamps are provided with slip bonnets that slip over and protect the gauze chimney of the lamp. When this slip bonnet was removed for the purpose of inspecting, the gauze would sometimes be found missing.

NEED OF GOOD EXPANSION RINGS

Now a word about the danger of the glass cracking when that has become heated, the lamp being screwed up tight and there being no expansion washers to allow for the expansion of the glass by the heat. I understand that comparatively few lamps have these expansion rings and in few of these is the ring really efficient.

When a lamp is tightened up on a hard-fibre washer that is non-resilient, there is no yielding to allow for the expansion of the glass. Even with a resilient washer, such as asbestos, the globe is sometimes cracked when the lamp becomes excessively heated in a gas-charged atmosphere.

Many experienced firebosses with whom I am personally acquainted have long had the habit of not screwing the lamp tight against the globe, until later when the lamp will have become warm on their way into the mine. These men claim they are very particular about tightening up their lamps before leaving the main intake airway, by which time the globes have become fairly warm and expanded. The same men are emphatic in their claim of globes having been broken by tightening them up too soon.

LAMP GLOBES CRACKED BY HEAT

On more than one occasion, I have seen the globe crack when a lamp was hanging on a prop and had become overheated, perhaps by reason of the presence of more than the usual amount of gas in the air.

In a little book edited by L. S. Hawkins, chief of the Division for Vocational Education, in the trade-extension classes organized in coal-mining communities, occurs the following reference:

The expansion ring holds the glass sufficiently firm to prevent shaking and rattling and to keep tight joints, but it has give enough to allow for expansion. If the expansion ring is properly designed it will render it practically impossible to break the glass by screwing the font or lower ring up too tightly.

The expansion ring is found on only a few modern safety lamps and on only one is it really efficient. Its purpose is to permit the glass to expand when heated and so prevent cracking. This is a common occurrence when no expansion ring is used, for the brass ring in the oil safety lamp, or the font in the naphtha safety lamp, may be screwed up so tightly that the glass is put under strain and when it becomes heated the additional strain causes it to crack. A cracked glass is a great source of danger.

The United States Bureau of Mines has given much attention to the examination and testing of different types of safety lamps, several of which have been approved by the bureau engineers. One of these lamps, which has an efficient expansion ring, successfully withstood fifty tests in a most explosive mixture of gas and air traveling at a velocity of 2,500 ft. per min., without a single glass being broken or cracked.

Bayview, Ala. JOHN WALL, SR.

OTHER LETTERS

WITH much surprise I read the account of Joseph Cain, *Coal Age*, July 13, p. 60, where it is stated that three firebosses, whose lamps he found to be improperly assembled, gave the excuse that they feared to screw up their lamps tight, believing that the heat would expand and crack the glass.

Such an excuse seems to me more like a grandmother's dream. It is strange to me that there are such firebosses around. Every one looks to the fireboss as the man whose duty it is to warn them of walking into danger. It is hard to understand how they, themselves, would be guilty of doing the very thing they are supposed to keep others from doing.

HUMOROUS VIEW OF RECKLESS OR CARELESS FIREBOSSING

The fireboss who would prefer to enter a mine with his lamp in an unsafe condition, rather than to make it safe by screwing it up tight, ought not to be bothered with a safety lamp. Taking a carbide lamp, he should suggest to his brother firebosses that they stay outside of the mine while he goes in to make an examination, doubtless, to his own suicide. Better that, than to have a number of men killed through his ignorance.

But, laying joking aside, let me say without hesitation that, in all the gassy mines, in the bituminous region of Pennsylvania, in which I have worked, no fireboss would ever make his second round with a safety lamp in the condition stated by Mr. Cain.

While I agree fully with his suggestion that all safety lamps should be examined and tested before being taken

into the mine, his method of making the test, by blowing around the glass of the lamp, is not the one that I would use to determine the safe condition of the lamp.

In my opinion, the blowing test is insufficient. If such a test should cause a lamp flame to flicker and possibly go out, we might all agree that the lamp was unsafe; but, to my mind, the security of a lamp, under conditions to be met in the mine, has not been proved by blowing against it.

Instead of the blowing test, I would advise having an explosive mixture of gas and air, prepared on the surface at a place so arranged that the lamp could be subjected to such an atmosphere while its action is being observed. I consider the testing of lamps before taking them into the mine an important matter and hope to hear from others along that line. JAMES THOMPSON.

Mayport, Pa.

WHAT seems strange to me, in reading the letter of Joseph Cain, *Coal Age*, July 13, p. 60, is that he should condemn three lamps as being unsafe, simply because the light could be blown out with his breath.

The fact that Mr. Cain only made his special examination of the mine, once in three months, to ascertain its gaseous condition, would indicate that he had every confidence in his three firebosses, who asked to accompany him on this occasion.

HAS LITTLE FAITH IN BLOWING TEST APPLIED TO SAFETY LAMPS

It is well known that the breath from the human body contains carbon dioxide, which would have more or less of an extinctive effect on the flame in a lamp. As I look at it, it is not strange that the three lamps inspected by Mr. Cain could be blown out with his breath.

Let us suppose, for example, that the flame of each lamp was first lowered, as when making a test for gas. Then, if the lamp was grasped tightly with both hands, the fingers covering more or less the openings in the air-admission ring below the glass, it is easy to believe that the flame of each lamp could be blown out.

Our friend states that he blew hard, just below the glass cylinder where it rested on the brass ring supporting it. It is my belief that it is possible to blow out the light, in any Wolf safety lamp, by blowing hard against the lamp under the air-admission ring.

My conclusion is that this is not a proper test to determine the security of a lamp, and I think that most gas inspectors will agree with me in that regard. It is more important to make a close examination of every lamp and see that all parts are clean and properly assembled and that there is no defect or injury apparent in the gauze. But when a lamp has been so prepared and lighted, its flame can generally be blown out with the breath, in the manner described. OSCAR H. JONES.

Wilder, Tenn.

Heating of Gob Areas

Cause of heating—Use of salt as a preventive—Excluding air from the waste by different means.

IN THE issue of *Coal Age*, May 25, p. 1886, a mining engineer asked for suggestions in regard to eliminating the trouble arising from the heating of gob areas; in longwall advancing. He stated that the primary cause of the heating is the mixture of fine coal, slack and clay cuttings containing pyrites.

It seems that a radialax machine is used for the mining, which was done in a clay band in the coal, a foot from the roof. Under these conditions, there can be little doubt but that a large amount of fine coal and clay cuttings would accumulate at the working face and have to be either loaded out or stowed in the waste.

Owing to the presence of the sulphur, the stowing of this refuse in the gob would easily cause the waste to heat. To my mind, the suggested application of salt, unless used in excessive quantities, would keep the place moist and have practically the same effect as to saturate the place with water, which it is claimed would increase the trouble.

Not wholly knowing the conditions, it is only possible to make a few suggestions that may or may not be ap-

to be carried into other parts of the mine. If permitted, I would suggest a combined panel system and modified longwall method of working, in order to eliminate gob-fire troubles.

As shown in the accompanying figure, this proposed method consists in driving the main developing entries three abreast, on a grade favoring the loaded cars. The seam is said to have a moderate pitch and these main entries are driven approximately on the strike but so as to afford a slight grade in favor of the loads. The entries are driven narrow and the machine cuttings are loaded out from them.

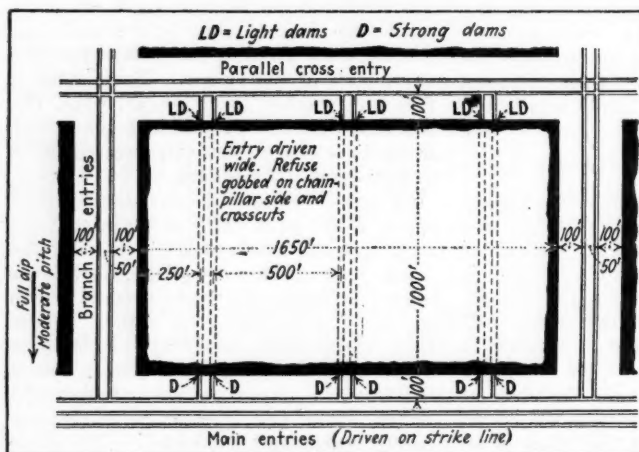
At intervals of 1,900 ft., branch entries are driven up the pitch, in pairs and on 50-ft. centers, with 95-ft. barrier pillars on either side, leaving solid blocks of coal 1,650 ft. between them to be worked out as panels, on the longwall system. The panels are completed by driving cross-entries, at intervals of 1,250 ft., in pairs, parallel to the main entries and on 50-ft. centers, with 95-ft. barrier pillars on either side. This makes the size of a working panel 1,650 by 1,000 ft. In driving all these entries, the safest practice is to load out the machine cuttings rather than to gob this material, which will heat if stowed in the crosscuts, as is common practice.

Starting on the main headings, each panel is worked by driving three pairs of butt headings on 50-ft. centers and directly up the pitch, thus leaving 245 ft. of coal on each side of each pair of butts, to be worked out as longwall-retreating faces. The butt headings are driven narrow, 10 ft. wide, through the 95-ft. pillar, after which they are widened out to 15 or 18 ft., depending on roof conditions. This extra width not only avoids pay-

ment for yardage, but affords room for storing the cuttings, on the chain-pillar side, between the crosscuts. I want to say, however, that such practice is not recommended, it being advisable to always load out these cuttings.

Working a panel on the retreating system, starting at the top of the pitch, there would be practically six 250-ft. faces or, if worked in steps, say thirty 50-ft. faces. Allowing four men working each 50-ft. face and assuming a machine cut of 6 ft., would give an output of, practically, 45 tons, per day, from each face, making the total daily output between 1,200 and 1,500 tons, from a single panel.

The concentration of work thus effected would enable all the coal in a panel to be taken out before much heating took place in the waste. Of course,



COMBINED PANEL AND MODIFIED LONGWALL SYSTEM

plicable in this instance. Where certain areas are giving trouble by heating, it may be possible to cover up the exposed portion with soil or clay taken from the surface into the mine. Mixed with some salt, this coating would probably remain moist and pack down so as to form an airtight covering, particularly if a light application of water was used.

To be brief, in my experience, there are two ways of fighting these conditions with any degree of satisfaction. The first is, to seal off the area so as to completely exclude the air; or, second, cause a sufficient air current to sweep the waste area to keep it cool by carrying off the heat generated.

Of these two methods, the last named is less practical than the first, because the noxious gases generated are liable

the chain pillars, in the headings, should be pulled as the work proceeds. In case trouble develops, however, the narrow openings, in the 95-ft. barrier pillars, will afford ample opportunity for the building of good airtight stoppings sealing off the district.

By making these stoppings sufficiently strong to withstand the pressure of the water, any panel or district could be flooded, if this became necessary. If a district is simply sealed off the usual pipes should be built into the stoppings for drainage and for testing the condition of the air within.

The method I have described, furnishes a means by which the gob-heating problem can be successfully handled. As the development of this system proceeds, the more newly turned branch entries can be used for haulage roads and airways, while pulling the barrier and chain pillars of the cross-entries. With the complete extraction of all the coal in each panel, and allowing for a 20 per cent loss on the barrier and chain pillars, this method should net a 95 per cent extraction of the seam.

Mt. Harris, Colo. THOMAS ALLEN.

Making Americans

Illiterate Americans harder to manage than foreigners—Intimidation of foreigners by American leaders—Votes in meetings no criterion—New standard of Immigration needed.

READING the excellent article of S. D. Hainley, *Coal Age*, Apr. 13, p. 618, I am reminded of numerous experiences of my own in the coal fields of Pennsylvania, West Virginia and Kentucky.

While I am in hearty accord with every effort that should be made to educate the foreigner, in regard to his obligations to the nation, yet my experience teaches that the illiterate American is a harder subject to manage than the average foreigner, whom I have found more thrifty, energetic and religiously inclined than the ignorant American.

In practically every instance of misunderstanding with the men, I have found the foreigner always willing to do the right thing, except in cases where he has been intimidated by leaders, who are usually American born. It is these leaders who control the situation and it is their action that is responsible for the attitude of foreign miners assembled in a body to consider questions of what they assume and believe to be to their interests as workers.

It is a common occurrence for a meeting composed of a majority of foreign miners to be ruled by one or more individuals acting as their leaders. The votes taken at such a meeting are no criterion of the real feeling of the men, who are misled and blinded by the representation of these leaders.

Taking everything into consideration, I believe it is going too far to expect every man entering our country to be able to read and write the English language. This opinion is strengthened

when we consider the hundreds of thousands American-born workers, who are illiterate and about whom we exhibit less concern than the foreigner who migrates to our shores. I am speaking now educationally.

In my judgment, a far better standard on which to base our immigration laws would be one based on a higher

moral and physical footing. The moral attribute, in a man's character, stands for more than his intellectual attainments when we are striving for citizenship and national ideals. Proceeding on this plan, there will be little doubt but that the educational training required will follow.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Effect of Storage on the Heating Value of Coal

Size and Piling of Coal More Important Than Ventilating the Pile—Experience Proves Heating Value Not Materially Impaired—Prejudice Due to Various Causes

KINDLY permit me to ask a question that, at the present time, has a peculiar interest. It relates to the storing of coal during periods when the production exceeds the demand. There has been a well defined prejudice against the use of storage coal, the claim being advanced that its heating value has been impaired and that the coal does not burn as freely as when it is freshly mined.

The present state of the coal industry must impress everyone with the many advantages to be gained by storing coal. Not only would it be the means of affording miners more steady work, during the dull season when trade is slack and the market demand low; but it would tide over such periods of depression when industrial disputes have closed the mines and the supply of coal is limited.

With these thoughts in mind, I want to ask the question: If coal is purchased and kept in storage for one year prior to its being used does it possess the same heating value as freshly mined coal? In other words, does coal depreciate in heating value and to what extent? Can a furnace be handled as easily with old coal as with coal fresh from the mine? W. L. JACOBSON.

New York City.

The question of coal storage is, indeed, an interesting one at the present time, when the consuming public is brought face to face with a condition that will be appalling if continued but a few weeks longer. As pointed out in this inquiry, the storage of large quantities of coal would have the advantage of keeping the mines running more regularly during a slack market, or when the supply of cars is wanting.

It would eliminate one of the chief hindrances in the work of the miner, by giving him fairly constant employment. It would help to stabilize the industry, in the matter of the price paid by the consumer, and avoid the fluctuation that is common to the present system. With the guarantee of fairly

steady work, the coal miner would not have the excuse he now offers for demanding higher wages, and the present high price of fuel would more quickly become normal.

Referring to the question asked by the inquirer, it can be stated that the heating value of coal that is properly stored is not impaired to the same extent as is generally believed. Much depends on the size of the coal and the manner of piling. These factors are more important than the matter of ventilating the pile, which has often been urged as a necessary requirement, in order to prevent overheating and spontaneous combustion.

The result of the experiments made along this line, by the Federal Bureau of Mines, as well as work of a similar nature undertaken by the University of Illinois, shows that the heating value of coal, properly stored, does not materially decrease.

Attention has been drawn to the need of eliminating from the coal to be stored, the smaller sizes, including fine coal and slack. It is also needful to prevent the segregation of coal of different sizes, as invariably happens when the coal is dumped at the top of a conical pile. The larger sizes then roll down the sides of the pile, leaving the fine coal at the top.

In order to avoid this condition, the coal should be deposited in uniform layers over the entire area. There is less weathering of the coal when it is stored under cover, but this is not always possible or practicable.

The prejudice prevailing more or less widely in respect to the use of stored coal arises largely from one or two sources; namely, the improper piling of the coal and the mixture of refuse gathered from the floor of the pile, in replacing the coal. Naturally, there is a greater loss in the storage of the softer and more friable coal, than occurs in the storage of anthracite and the harder grades of bituminous coal.

Little trouble is experienced in the storage of anthracite, owing to a less

tendency to slack; and there is not the same danger from overheating in the pile and spontaneous combustion resulting therefrom. Coal containing sulphur (pyrites) is more subject to overheating and firing, by reason of the oxidation of the sulphur. For these reasons, all coals are not stored with the same degree of success, the softer and inferior grades requiring to be watched more closely than coal of better quality and harder.

When coal is to be stored a large level area should be selected and prepared by removing all refuse and vegetation from the surface. For a permanent storage plant, nothing is better than a concrete floor. Large storage bins, if properly erected, will greatly assist the reclaiming of stored coal. In any event, every precaution must be taken to reduce the breakage of coal in handling and eliminate its rough use of any kind.

Some difference of opinion exists in regard to the ventilating of coal piles. If this is done, however, sufficient air

must penetrate the pile to carry off the heat generated. The introduction of a small amount of air only gives rise to oxidation, while not reducing the amount of heat that results.

Consequently, better results will often be obtained by excluding the air and moisture as far as possible. The floor of the pile should be well drained; but tiles, for that purpose, should not be laid beneath the pile, as that would give opportunity for the entry of air to the center of the pile. Every storage pile should be closely watched for the first evidence of heating, and space should be available for the removing of such portions of the pile before the trouble increases.

It should be stated, in closing, that stored coal loses some of its coking qualities and has not the same value for making gas. In storage, the coal loses some of its gas and, in firing, needs to be spread in thinner layers over the firebed. At the same time, its heating value, depending largely on the fixed carbon, is not depreciated.

the flame of the burning powder and produce a local explosion of dust, which may or may not be extended throughout the mine, depending on the conditions existing in the workings.

QUESTION—Describe how you would timber an entry where the roof alone needs support.

ANSWER—Assuming a fairly good slate or shale roof where the coal is hard, it is common practice to support the roof, at short intervals of, say five or six feet, with good crossbars, set in hitches cut in the top of the coal as shown in Fig. 1. When in position the



FIG. 1. CROSSBAR SET IN HITCHES

bars are firmly wedged at each end. Where the roof is more frail and liable to scale off and fall between the crossbars, some form of lagging must be used above the bars.

Where the coal is less hard, the crossbars must be supported on legs, on one or both sides of the entry. If the hardness of the coal will permit, short legs set in hitches cut in the rib, as shown on the left in Fig. 2, are used to support the bars. Otherwise, the long



FIG. 2. SHORT AND LONG LEGS

legs, shown on the right of the figure, must be used. At times, in order to avoid their being knocked out by a derailed car, these legs are set back into the rib.

QUESTION—Make a sketch of a set of timbers, showing how you would wedge them and give reasons for your method.

ANSWER—As shown in Fig. 2, in the last question, two wedges should be driven between the collar and the roof, near the top of each leg. The effect of this is to transfer the weight from the center to each side post and not permit it to bear on the center of the collar.

QUESTION—What is the weight, in tons, of the air constituting the ventilating current of a mine when the combined volume of the several currents or splits is 2,240,000 cu.ft.?

ANSWER—We understand this question as referring to the weight of the entire air volume of the mine. To ascertain its weight, it is necessary, however, to know both the temperature of the air and the barometric pressure. Assuming a temperature of 60 deg. F. and a barometer of 30 in., the weight of a cubic foot of air is 0.0766 lb. The weight of the given volume, in short tons, is then $(2,240,000 \times 0.0766) \div 2,000 = 85.8$ tons.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—In a mine giving off 2,250 cu.ft. of marsh gas (CH_4) per minute, the volume of air entering the mine being 70,000 cu.ft. per min., what is the percentage of gas in the air current at the outlet?

ANSWER—The total volume of air and gas, at the outlet, in this case, is 72,250 cu.ft. per min. The percentage of gas in this current is, therefore, $(2,250 \times 100) \div 72,250 = 3.11$ per cent.

QUESTION—What are the duties and qualifications of a shotfirer?

ANSWER—The duties of a shotfirer are determined largely by the company who employs him. In some cases, the shotfirer is charged with the duty of examining, charging and firing all shots prepared by the miners that are, in his judgment, safe. At other times, the miners not only drill their own holes, but charge and tamp them ready for the firing. But, in such cases, the shotfirer must examine every hole before it is charged by the miner. After the men have left the mine, it is the duty of the shotfirer to make his rounds and fire the shots in regular order, starting on the end of the air and proceeding against the air current.

The safest practice, however, is to make the shotfirer responsible for the entire work, locating and drilling all holes, and then charging, tamping and firing them, after the men have left the mine. In that case, the work of the miner is limited to loading the coal into

the cars ready to be hauled out of the mine. In other words, the miner becomes a loader only and is not permitted to perform any of the work of blasting the coal.

The qualifications of a good shotfirer are the possession of the necessary knowledge, experience and judgment that will enable him to break down the coal in the safest and most economical manner possible. In other words, he must be able to produce the largest amount of coal, with the least weight of powder consumed, and in the best marketable condition. He must be an active, industrious man, cautious and not given to taking chances.

QUESTION — Blownout shots: (a) Under what conditions may a blownout shot take place? (b) What danger may arise from the same?

ANSWER—(a) A blownout shot may result from the charge of powder being improperly located or because the shot has not been properly mined or sidecut, making the line of least resistance correspond more or less closely to the axis of the hole. Again, the hole may be overcharged, or improperly tamped, or have too large a diameter; or different grades of powder may have been used in the same hole.

(b) A blownout shot always projects a large volume of flame from the mouth of the hole. If there is any dust accumulated in the place, this is blown into the air by the force of the shot and will probably be ignited by

Is Western Kentucky Lolling In Downy Bed of Wealth?

Many Coal Producers Reap Unheard-of Profits—One Lucky Striker Pays \$1,500 for "Pot Hole" and Gets \$2,200 for Four Carloads—But Car Shortages and Few Contracts Restrict Earnings in Feast-or-Famine Field

By A. W. WILLIAMS
Louisville, Ky.

THE EYES of the coal industry have been turned on western Kentucky during the past few weeks, and few questions are heard oftener than the one concerning "enormous profits." However, giving the devil his dues, it is necessary to look at both sides of the situation impartially. Some western Kentucky operators are making big money. Some are doing well. Some have been barely "skating along."

Western Kentucky for many years has been a field that failed to make much progress or any large amount of money. While West Virginia and Pennsylvania operators were looked upon as "coal barons," western Kentucky operators were having a hard time in operating their mines and getting interest out of their investment. For years western Kentucky had a quite fair demand for domestic sizes in the Louisville, St. Louis, Nashville, Memphis and some Southern markets. Freight rates were against her in going north of the Ohio River. There was cheap coal in Illinois and Indiana, Ohio, Alabama, Tennessee and eastern Kentucky, and production was cheaper as a result of western Kentucky being a pit-mining section, while many other fields were using drift methods.

Old timers tell interesting stories of how they tiptoed screenings into cars free of charge to railroads for use in building fills and grades. There was no demand to speak of for mine-run other than a little railroad demand. In producing lump coal at a low price in order to compete with other fields it was necessary to give away or bank the screenings. There were no big industrial cities that could take western Kentucky fuel profitably at a price that would allow the operators to make money. The fuel was consistently "knocked" by competitors because some of it was poorly mined and of poor quality. However, most of western Kentucky's fuel is of good quality—a little high in sulphur, a little high in ash, but also quite high in heat units.

The operators finally pulled themselves up by their bootstraps, so to speak. They put in a first-class traffic department and engaged a high priced and competent traffic lawyer. They worked for equitable rates to the North, West and South, and were signally fortunate in improving their condition. During the war period Pittsburgh coal dropped out of the Ohio Valley and Southern markets as Ohio River transportation methods fell into the discard, and war activities took the entire production of the Pittsburgh district. Western Kentucky coal then moved into a wider area and made good.

Following the war there were periods of feast and famine. In 1920 the field made some money. It was not amenable to the efforts to enforce fair prices, as Federal Judge Evans, of the U. S. District Court for Western Kentucky, at Louisville, believed in the laws of supply and demand, and held that any effort to force a so-called fair price was unconstitutional. Western Kentucky asked her own prices and obtained them.

In 1921 between higher production costs and trouble in meeting competition some mines lost part of the profits they made in 1920. Then the eastern Kentucky sections, which were non-union, cut back to the 1917 wage scale, and offered western Kentucky a brand of competition that it was impossible to meet profitably, except in a few cases where freight rates favored.

However, back in the spring of 1920, when the old wage agreements had been up for renewal with the unions operating in western Kentucky, the operators were foresighted enough to hold out for a protecting clause when the strike came off. The strike lasted a short time, and finally an

agreement was reached whereby the same general wage scale was offered as that in effect in Indiana, Illinois and elsewhere, but with a no-strike clause, under which the workers would not go out on strike in event of a national coal strike, provided the operators paid the peak wage, as called for in the contract, and continued paying this wage until the national strike was settled and a new general basis was arranged for mine labor.

The western Kentucky operators realized that a national strike was inevitable in 1922, when it was a foregone conclusion that the producers of the nation would endeavor to lower the wage scale which was forced upon the country by war-time demand and conditions in the labor markets.

The consequence of the good work of the western Kentucky operators was that when the national strike came off there was no labor trouble in the field. However, Mr. Hoover in deciding that a mine-run basis of \$3.50 a ton for all fields was equitable and just placed the cart before the horse in the judgment of western Kentucky. Such a basis if fair for eastern Kentucky and West Virginia, operating on a 1917 wage-scale basis, was held to be unfair for western Kentucky, operating on the peak scale. Western Kentucky offered to accept \$4.25 mine-run basis, but was turned down. That maneuver left the field under no obligation to the first Hoover conference.

SUPPLY AND DEMAND ONLY REAL PRICE BASIS

As demand for industrial and rail fuel increased and stocks in hands of public utilities, railroads, industrial concerns, etc., were reduced, prices began climbing. The old laws of supply and demand came into their own. Western Kentucky holds that there is no real price basis other than supply and demand, and any other effort to shape prices causes a fictitious market.

The operators proceeded to mine all the coal they could and sell it for the top price offered. Mine disability, some shortage of labor in a field that has not had opportunity to operate at capacity, some car shortage caused through poor distribution of equipment, and the fact that the physical capacity of the roads was not equal to the capacity of the mines prevented full-time production. However, prices hung at between \$3 and \$4 a ton until the walkout of shopmen resulted in severe car shortage, not only in the western Kentucky union field but in the non-union fields elsewhere.

Districts which had never purchased a pound of coal in western Kentucky began to demand it. Coal became coal, and there was no argument concerning size, prices being the same for any size. Long freight hauls, which under ordinary conditions would prevent purchase of western Kentucky coal, were forgotten. In June many consumers held off and refused to buy while waiting for the freight-rate reductions of July 1, which resulted in a rush of buying after that date, along with the rail strike.

Why should western Kentucky sell coal at \$3.50 a ton in districts where she had not had any previous business and no prospects of future business, if this same coal could be sold for \$7 or \$11 a ton? Seven and eleven were always triumphant numbers.

Buyers representing jobbers were active in the fields, searching for coal that could be supplied on demand or on accepted orders. Buyers for the big utilities were in the fields, from the industrial plants and from every line of steam consumption. Retailers for a time were interested, but didn't buy much coal, figuring that if the strike broke right, they could obtain it cheaper later on.

As prices advanced jobbers demanded a larger fee for handling coal. In taking the financing of \$7 to \$11 coal the

jobber had to carry big credits, and at 15c. a ton couldn't get his interest out of investment. He demanded up to 50c. a ton and got it.

From July 1 forward car supply has been one of the most uncertain of all uncertain things. One day there are no cars at many mines. The next day there may be a supply of 33 per cent, or 50 per cent. Railroad figures showing cars asked and cars supplied don't always tell a true story. Operators assert that they haven't received nearly the percentage of cars asked. Many cars loaded with coal were days and even weeks in getting away from the mines, due to the shortage of engines and to congestion in terminals. Other connecting roads were unable to handle cars turned over to them or to get empty cars back to the originating lines.

Getting down to cases, any mine producing full capacity and selling at \$7 to \$11 a ton would clean up. A mine with a daily capacity of 3,000 tons, produced at an average of \$2 a ton and sold at an average of \$8 a ton, would coin \$18,000 a day, or something over a million dollars in sixty working days. However, there are not many 3,000-ton capacity mines or companies in western Kentucky and, unfortunately none of them has been able to run at capacity, or even 50 per cent of capacity as an average.

Production costs on full time operation, it is alleged, could be held at \$1.90 or under even on the peak wage scale, although some operators argue that the cost is \$2.25 or thereabouts and that it runs up to around \$2.50 a ton on only part-time operation. However, anything over \$2@\$.25 a ton appears mythical, in view of the fact much lower prices were quoted in the spring, when mines were not busy.

Take, for instance, the week of Feb. 13—prices quoted at that time through jobbers showed lump, \$2.25@\$.275; mine-run \$1.70@\$.2; slack, \$1.15@\$.160. Screenings during the early spring sold at under a dollar, with no appreciable increase in lump. Operators asserted that they were losing money, but were forced to run to hold their trade and to take care of contracts.

PLAYING FAIR WITH RAILROADS INSURES CAR SUPPLY

Contracts—another feature overlooked by those who assert that western Kentucky is cleaning up—have been taking coal from more than one mine at prices ranging from \$2.25 to \$2.75 a ton. This accounts for a part of the small production that has been available in the market during the last few weeks and left less coal for the open market than generally figured.

One operator without business last season was treated white by the Illinois Central R. R., which took his production at \$2.60 a ton. Just recently the road is reported to have offered to take his production at \$2.75 a ton, and the operator played fair and accepted the proposition at a time when he could have sold his production on the open market at a much higher figure. However, he is getting car supply.

So there have been all sorts of obstacles to getting rich quick. The big operators are not as likely to have been making big money as the "pot hole" operators. One small mine was sold a few months ago for \$1,500, it being little more than an opening in the side of a hill. On Saturday, July 22, the owner was offered \$2,200 for the four 50-ton cars he had loaded, the average being \$11 a ton. In buying the mine he took a chance, played his hunch, and made money. Under ordinary conditions he would merely have a hole in the ground. As he couldn't hope to compete with the large mines, with fine equipment for producing at a low cost, his mine would be idle and he would be paying taxes on a hopeless investment. As it was his production cost for the four cars was much higher than at well-equipped mines, yet those four cars paid for the whole mine.

Railroads have been taking a great deal of the production in western Kentucky, paying all the way from \$2.60 to \$3.50 a ton where purchased by the line on which the mine is located. Outside railroads, such as the Rock Island, have had to pay the market. The advantage in treating the originating line right lies in car supply. There have been some contracts at \$2.25@\$.25, and in some cases agreements have been reached whereby the price was advanced and deliveries continued.

Throughout the period of high prices car supply on the

Illinois Central R. R. to western Kentucky mines has been fair, running up to around 75 per cent most of the time. This would indicate that mines which have been fortunate enough to be located on the Illinois Central, are the ones that have been cleaning up. Of course the Illinois Central has been drawing coal supply for the entire system from these mines, reducing the available supply for open market. However, on the Henderson and Ohio & Northern divisions of the Louisville & Nashville R. R., car supply has been rather steadily under 50 per cent average, running a little better than that on the Henderson perhaps, and down to around 30 per cent on the Ohio & Northern.

Some produced coal has been under load for two weeks without moving, Madisonville, Ky., reporting coal loaded on July 11 finally moving out on July 24. This is in the "interesting if true" category.

It is held that the potential capacity of the western Kentucky fields is around 1,900 cars daily. However, the railroads can't handle that amount of tonnage. In a recent big week it is reported that 8,000 cars were gotten out, which would figure about 1,330 cars a day, although, generally speaking, operators assert that railroad capacity is around 1,500 cars a day. It is said that the Illinois Central R. R. on Tuesday, July 25, handled 878 cars of coal from its western Kentucky mines, but this cannot be verified. Total production of the field probably has been around 750 to 1,000 cars a day, according to some well-posted coal men.

FEEL ENTITLED TO CLEAN UP IF ABLE TO

Whether western Kentucky is cleaning up is a matter of conjecture. The field frankly enough feels it is entitled to do so if it can get away with it. As one coal man aptly expressed it: "There ain't no one that ain't a going to sell whatever he is selling for all he can git for it." Another coal man remarked: "There isn't anyone that is going to buy our coal from us unless they can get better coal for less money from us than from anybody else. They are not going to pay us any more than they have to pay in some other field. They are not going to pay a higher freight rate to get our coal under normal conditions than they will pay to get a lower grade coal from another field. On emergency business you are handling business that you may never get another crack at, as price is the governing commodity in ordinary fuel coal. If we can meet the price of the other field we can't always meet the freight rate. A lot of good it would do us to take care of a lot of buyers who have never been in the field before and who never will be in it again, merely for the hopes of getting some of their business when conditions round out to normal again.

"The western Kentucky coal man is being blamed for a lot of things over which he has no control. He is not given credit for being an intelligent business man. The old talk of the orphans and cold tenements is bobbing up, but it is still a long time before cold weather, and all immediate production is emergency production, which wouldn't go to the retailer anyway. Cutting prices of fuel isn't going to reduce prices that the mine operator will pay for his blasting powder, for his picks, shovels, mine cars, etc. The cost is being paid by the utilities, which do a bit of gouging whenever they have the opportunity; by the railroads, by big industries, etc., and of course the consumer has to pay a little of the cost himself. However, the coal game is a dirty one; therefore it should pay a profit."

The general motto has been: "Get it while the getting is good." The coal trade in western Kentucky is generally described as one in which either a feast or a famine prevails. The leftovers from the feast take care of the periods of famine; otherwise most companies would be broke.

THE AMERICAN FEDERATION OF LABOR has discontinued its mining department which had been maintained at the Washington headquarters for special consideration of mining matters. James Lord, who has been president of the department, has taken the field as a labor organizer and will operate in the Pacific Coast region. It is said the abolition of the department was due to a large extent to differences which have arisen between Samuel Gompers, president of the American Federation of Labor and John L. Lewis, president of the United Mine Workers.

Washington Officials View Outcome at Cleveland As Makeshift Truce—Public the Loser

BY PAUL WOOTON

Washington Correspondent of Coal Age

EVENTS at Cleveland have progressed to the point where they foreshadow the beginning of the end, observers in Washington believe. The agreement promises to bear enough semblance to a national arrangement to save Mr. Lewis' face. It is regarded here, however, as very evident that Mr. Lewis has lost his fight for a national agreement. It was regarded as a farce to follow out the old plan of two operators and two miners from each state when the votes from Ohio represented practically all of the tonnage covered by the agreement they proposed.

Federal officials are inclined to regard the result as something of a draw. The strength of the union has been clearly demonstrated. The mine workers have successfully resisted a reduction in their pay. The check-off will continue and working conditions remain unchanged. The operators at least have broken up the central competitive field. The prospects are that the union will lose the weakly-organized districts. No one of the fundamental ills of the coal industry has been remedied. Every issue involved in this strike must be fought out again. A truce now appears to be a certainty, but it will be a make-shift one.

The public is more concerned with the net effect of the strike. There has been a great industrial set-back. There has been widespread unemployment. The nation's fuel bill for 1922 will be \$300,000,000 more than it was in 1921. One-half of one per cent of the population has taken advantage of its position to dominate the supply of a necessity of life. The interests of 99.5 per cent of the population have been affected adversely. There has been no humbling of the organization responsible. No industrial disciplining has resulted. Nothing of permanent value to the public has come from the strike.

While there is no doubt that many operators will not hold out long against the restoration of the 1920 wage scale, it is recognized that should Pittsburgh or any of the other individual districts refuse to become parties to the Lewis agreement, they must make up their minds to take severe punishment. They are certain to get it. With many union men working, strike benefits soon could be paid which would enable the men in those districts to hold out longer. It would be particularly difficult to reduce wages when even the non-union fields are pushing wages to the 1920 level.

As more and more is learned of the situation, it is being revealed that the United Mine Workers were on the ragged edge when they induced the President to call the conference in Washington. They appealed for arbitration as a last refuge. They knew that arbitration meant a reduction in the wage scale. But before the conferences had progressed very far, the railroad shop crafts went on strike and demonstrated unexpected strength.

This change in the situation put a new face on the whole matter. Mr. Lewis was quick to take full advantage of it, but he over-reached himself. He thought the operators would be forced to push themselves through the needle's eye that he held up for them at Cleveland. In that effort there is evidence that he was bolstered and encouraged by coal operators in eastern Ohio. The response to his invitation was a great disappointment but the real need for a national agreement had passed so Mr. Lewis has been willing to negotiate with eight per cent of the country's normal tonnage. His previous declarations that he would deal only with the bulk of the tonnage were abandoned without explanation.

One of the big factors influencing operators to get back to work is the fear that they will lose markets permanently to the non-union districts which have a better coal. Reports to Washington indicate that many industries, now that they have had a taste of high-grade coal, intend to use it permanently. Other companies fear the loss of busi-

ness gained at great cost in the Northwest. They do not want to see Illinois get the business which represents a large outlay to them. There are other operators who think they can make enough in the next six months to make it attractive to take chances on the future.

Some expect to sell all their coal for the high dollar as long as the market lasts and then go out of the business. Those with such ideas in mind will be interested in today's statement by Fuel Distributor Spencer that agreements as to maximum prices will be sought immediately in those districts which return to work. He did say that it is possible that no control over prices would be attempted if the entire union area should resume operations. He called attention to the prompt flattening out of the market following the settlement of the 1920 strike.

An official, when asked what would happen if the union operators were to sign up until March 31, 1924, replied that it would be a great victory for the non-union coal operators, as it would mean that the non-union fields would supply most of the country's coal next winter.

There is some speculation as to the number of coal miners who may have gone into other industries during the strike. Some think they may stay with their new line of work and that there may not be such a superfluity of coal miners in the future. The majority opinion, however, seems to be that coal mining at the 1920 rate of pay is so attractive, when all other circumstances in connection with the work are considered, as to insure the return of the business of every man who has ever engaged in it and a considerable number of men from other industries where the wage scale is lower and where working conditions are more strict.

Interference of Priority with Contracts to Be Limited Except in Emergency

THE Federal Fuel Committee is giving serious attention to the problem of transporting coal supplies from Kentucky and the Virginias up the Great Lakes before navigation is suspended. It has been agreed tentatively that at present 250,000 tons per week will be allotted to this service, but this figure may be changed at any time as the daily coal production and movement varies.

The problem of the distribution of car supply between mines engaged in the shipment of coal classified under No. 1 priority and those shipping coal to public utilities and other consignees under previously-made contracts continues to demand the attention of the Fuel Committee according to a statement issued on Aug. 10. Though the committee desires to preserve the integrity of contracts as far as possible, its feeling is that general contracts must in a measure take secondary position to the meeting of particularly urgent coal necessities created under an exigency which has arisen since such contracts were made.

Present plans of the Fuel Distribution Committee are that orders for Class No. 1 coal shall be so distributed so as not to disturb seriously the proper distribution of cars. All orders for coal considered to be within that classification will go to the district committees who will apportion the orders among the mines in their districts. In such apportioning of orders it is expected that contracts will be observed as far as possible. In this connection, it is pointed out that many operators, having in mind the maintenance of their normal business relations, would prefer to devote their energies to filling their regular contracts.

The Fuel Committee is seeking a practical method of insuring that coal ordered through a retail dealer for the use of public utilities or hospitals will not be diverted to other channels. Where it is manifest that an order for coal comes

within a particular classification, no certification to the railroad will be necessary to obtain priority under order No. 23, of the Interstate Commerce Commission.

Where, however, the consignee of a shipment does not show the character of the coal and its uses it will be necessary for the shipper to obtain a certificate from the State Fuel Administrator that the coal is to be used in Class 2 priority, and a certificate should accompany the consignee's order to the mine. This will obviate taking matters of this kind to the Washington Central Committee, as it will give the mine operator the information needed to enable him to obtain from the railroad, cars to which he is entitled in making shipments of priority coal.

The U. S. Geological Survey has estimated that 765,000 tons of bituminous coal weekly will meet the immediate needs of gas and electric public utilities and domestic consumers in the territory east of the Mississippi River. Of this, New England would require 9.2 per cent; the non-coal-producing states of the coast region exclusive of New England, 21.6 per cent; coal-producing states of the coast region, 22.9 per cent; and Ohio, Indiana, Illinois and Michigan 46.3 per cent. Railroads in the same territory will require 2,000,000 tons weekly, making a total emergency requirement of 2,765,000 tons. Coal is now being produced in this territory at the rate of 3,800,000 tons weekly.

The railway mechanical situation on coal-carrying lines in the Virginias, which has been hampering the shipment of coal, continues to improve with the importation of mechanics from eastern and western lines. The requirements of the Chesapeake and Ohio and the Norfolk and Western systems are said to have been practically met, and mechanics are now being diverted to the Virginian Ry. Shipments of coal from southeastern Kentucky are being retarded to some extent by conditions at Corbin, Ky., where more than 300 railway mechanical employees are said to have left their employment because of threats of violence, but in the western Kentucky field coal production has been accelerated by a 100 per cent car supply.

The Department of Justice has rendered an opinion to the effect that priority orders for coal issued under Classification No. 1 of the Interstate Commerce Commission, have preference over other orders which operators may have on their books.

Washington, Aug. 12—After checking up ship charters, the National Merchant Marine Association estimates that imports of British coal during the next month will approximate 1,000,000 tons. Practically half of that amount will be carried in vessels flying the American flag. The rush to charter coal ships is welcomed by the Merchant Marine Association for the effect it is having on the idle fleet of the United States Shipping Board. In the course of its study of the situation, the Association found that 2,000,000 tons a month is the absolute limit of British exports at this time. The capacity was greater during the war, but much of the coal handling machinery at tidewater no longer is servicable. Since Great Britain is not likely to neglect its regular export coal trade to look after the temporary needs of the American market, the Merchant Marine Association reaches the conclusion that exports from England to the United States are not likely to exceed 1,000,000 tons a month. Secretary Hoover states that the cancellations of orders placed in Great Britain, which have been mentioned in the press, only applied to orders which the British industry could not fill.

Fuel Distributor Spencer states that wholesalers are being allowed to charge the commissions provided under Dr. Garfield's regulations. This commission is not allowed, however, when railroad coal is purchased through a sales agency, Mr. Spencer stated. While weak spots have developed in the supply of coal for public utilities, Mr. Spencer states that speaking generally the public utility situation is not in bad shape. Most of the utilities, he said, have stocks sufficient to last from ten to forty days.

"DYNAMITE'S DANGEROUS FOR THEM as ain't used to handlin' it; but an experienced miner like me doesn't have to be careful."

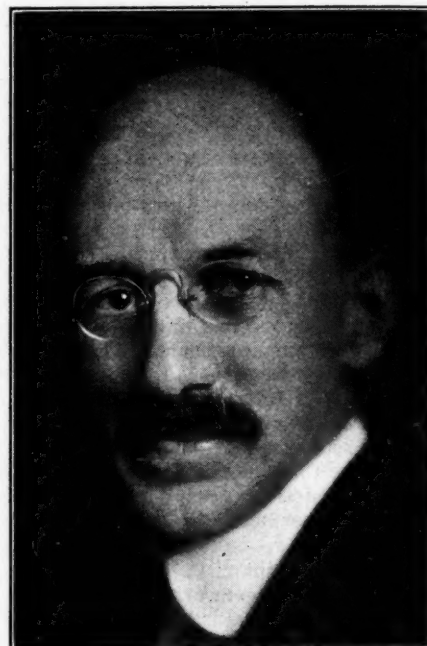
He doesn't—now.

Holbrook, of Bureau of Mines, New Head of School of Mines at Penn State

E. A. HOLBROOK, the assistant director of the United States Bureau of Mines, has accepted an appointment as dean of the School of Mines of Pennsylvania State College.

Mr. Holbrook frankly admits that he is leaving the government service with reluctance. He says that the work has been particularly congenial and that the opportunity offered to do valuable public service never was greater. He believes, however, that he has made all the contribution to the public service that he can afford and has accepted this new position because of the very material salary difference.

The resignation of Mr. Holbrook has been called to the attention of the congressional committees studying reclassi-



E. A. HOLBROOK
Tarriss & Ewing

fication of government salaries and cited as an example of the loss of highly necessary technical skill which absolutely cannot be replaced at present salaries.

The salary of the assistant director of the Bureau of Mines has stood still for ten years. Formerly, salaries in educational institutions were on about the same level for comparable positions in the federal service. During the period that federal salaries have remained the same, college salaries have more than doubled.

Priorities Reduce Steel-Mill Operations

UNDER priority orders as well as under the system of car distribution now in effect steel mills in the Wheeling District and in the neighboring states of Ohio and Pennsylvania are suffering from a fuel shortage which has resulted either in restricted operations or in a complete suspension. It is next to impossible for many of the mills to obtain fuel owing to the preference given the railroads and utilities. Other industries are also suffering from a lack of fuel, but the shortage is making itself felt to a greater extent in the steel industry than in others where there was not as much activity. Steel mills had already been adversely affected by the rail strike but with their fuel cut off and with open-tops being given to the mines to the exclusion of other industries, steel mills have found it impossible to transport their products to market.

Illinois Operators Determinedly Hold Out at Chicago When Lewis Refuses Arbitration

BY E. W. DAVIDSON

ARBITRATION was the one important issue which prevented President Lewis of the United Mine Workers of America from drawing Illinois into his Cleveland conference last week. For four days from Tuesday until Friday, the operators of Illinois remained in session at Chicago, burning up the telephone and telegraph wires to all points of the compass making suggestions and proposals that would have opened the way to their taking part in the Cleveland conference—on a basis of straight-out arbitration. That state even sent a delegation composed of Andrew J. Maloney, J. W. Needham and H. C. Perry to Toledo to meet W. A. Glasgow, attorney for the miners, but it refused to approach Cleveland unless arbitration was agreed to. This Lewis refused. So Friday at noon the operators adjourned sine die and went home saying Lewis might sign up a string of operators in some sections but that their job was to keep Illinois men out of it.

Before the Illinois men adjourned they cast a heavy bomb into the labor camp by publishing a letter from President Harding endorsing their position. All week long they offered to deal with Lewis, sending the miners back to work at the 1920 wages and conditions provided he would agree to arbitration. Then they notified Lewis they were through. They wired Frank Farrington, Illinois miners' president, who was balking at the Cleveland conference, that their previous one-state offer to him to reopen the mines at the old scale for the winter pending arbitration still held. It was a week of determined refusal to surrender. Illinois said it would not go to Cleveland to deal with Lewis on his terms and it didn't.

During the first two days of the Chicago secret sessions of the operators there was a strong sentiment in favor of capitulation. There were operators who said there was no use kicking any longer against the pricks, and that the attainable price of coal this fall and winter would justify Illinois in surrendering. But sterner stuff prevailed. The majority clung to their belief that if Lewis would not agree to arbitration when all his other points were conceded to April 1, 1923, then he would be hanging himself if he were allowed to go ahead and make a wage scale with as many operators as he could line up.

"It's a fight to a showdown," was the final word of W. K. Kavanaugh, president of the 5th and 9th District Operators' Association as he started for his home in St. Louis at the end of the week.

"We did everything we honorably could to produce a strike settlement out of this occasion," said an operators' official. "Having been in great doubt as to just exactly what Lewis was willing to do—since he was trying to reach us through outside parties—and being unable to find out any other way, we sent our delegation of three to Toledo to meet Mr. Glasgow and find out. We found out Mr. Lewis had nothing to offer that we could accept. Mr. Lewis cannot say hereafter that we did not give him every opportunity to meet us on the fair basis we proposed."

There is no doubt but that the action of Alfred M. Ogle, president of the National Coal Association helped to strengthen the unity of the Illinois men against Lewis's conference basis. When it became known that Lewis had met Ogle in Philadelphia previous to the Cleveland conference, and that Ogle had practically agreed to do his best to bring Illinois and Indiana into the meeting, the feeling against Ogle in Illinois was bitter. There is much discussion about withdrawals of western groups from the National, as a result.

All week long there were preparations being made at many of the Illinois mines clearing the works for production. Boilers were fired, mules were taken from pastures down shafts and pumps and fans were speeded up. Officially the operators denied that this meant any weakening on their part. Certain owners believed they might have opportunity to dig coal all of a sudden, and they were get-

ting ready; that was all. Union officials throughout the state prophesied they would all be back at work soon.

"If they are," commented an operator at the close of the week in Chicago, "then it will be because we have made a separate state agreement with Farrington. That, it seems to me now, is the most likely outcome of this whole case."

The letter of President Harding to the Illinois operators, addressed to Dr. F. C. Honnold, written Tuesday, Aug. 8, follows:

"I am writing to make acknowledgement of your telegram of Aug. 4, in which you convey to me the proposition made to the mine workers in the State of Illinois. I am frank to say I do not see how your workmen can refuse such a proposal. If terms can not be settled on so liberal an offer it is manifest that the mining situation is very badly tied up, and the government must find for itself some way of extrication."

The final message to President Lewis on Friday noon was this:

"The operators of the State of Illinois have today adjourned their conference. They are willing to reconvene to consider any proposal of the miners of the State of Illinois that carries with it and without equivocation the most liberal arbitration proposal recently made by the President of the United States, carrying old scale of wages and conditions. We regret exceedingly your arbitrary position and your refusal to consider any plan except the unfair and unreasonable one you have offered. The people of the United States must now draw their own conclusions and we are willing to leave our case in their hands."

The telegram to Farrington renewing the Illinois offer to reopen the mines at the old wages and to fix a new scale and set of working conditions by unbiased arbitration was:

"The operators of the state of Illinois have adjourned their conference today subject to the call of the three presidents. They are prepared to reconvene at any time to discuss with the miners of Illinois the proposition of resumption of mining along the lines heretofore submitted to you as their president. We will not attend the conference at Cleveland as Mr. Lewis has refused all our suggestions that carried the proposal of the President of the United States and that provided arbitration points on which we will be unable to agree."

"We ask you again to carry out your contract with us to provide a contract to settle the mining scale in Illinois, and we again renew our proposition to open our mines at once on the old scale and conditions with an agreed submission of all disputed points to a board of arbitration composed of fair-minded citizens of the state of Illinois who are not in any way connected with the coal industry, their findings to be accepted without reservation by both sides and to be effective April 1, 1923."

The Illinois case as it stood at the end of the week is set forth to the public thus: "The adjournment of the meeting of Illinois operators who have been constantly in session here throughout the last four days, and their repeated refusal to attend the present meeting at Cleveland, Ohio, which was called by Mr. Lewis, is due to the following facts:

"1. The question involved is the right of the public to have a voice, through arbitration, in the determination of industrial disputes, thereby preventing the abusive use of power by labor leaders.

"2. The four state conference method of determining wage scales and working agreements in the coal industry has proven its ineffectiveness, its lack of fairness as a means of determining a basic wage rate and also has been challenged by the courts as being an illegal and improper procedure.

"3. The mine workers' plan of a national conference of operators and miners is open to the same objections and in addition thereto would practically guarantee a country-wide monopoly of mine labor such as that now prevailing in the State of Illinois.

"4. The Illinois operators have submitted to the mine workers several very fair proposals for a settlement. The operators have given the most careful and thorough consideration and reply to every proposal by the mine workers, or submitted by public officials or public spirited citizens.

They have accepted without reservation the proposal of the President of the United States and have continually offered to confer or negotiate, provided that, in the event of failure to agree, there should be public arbitration of disputed points and thereby avoidance of a repetition of the present tie-up. Mr. Lewis has constantly declined every proposal which carries bona fide arbitration of disputed points, and has always refused to meet except after acceptance of his own particular methods.

"The Illinois operators, after twenty-five years' experience, are convinced that joint collective bargaining such as now prevails in the coal industry, is not only unsatisfactory but inimical alike to the coal miners, to the coal operators and to the coal consuming public, and that for such procedure negotiation supplemented by fair arbitration must be substituted.

"5. The present meeting in Cleveland is in no sense representative of the coal industry. Operators producing possibly 30,000,000 tons of coal per annum, out of about 500,000,000 for the country and 225,000,000 tons for the former Central Competitive field, are there. The states of Illinois and Indiana, producing more than half of the old Central Competitive field tonnage are practically unrepresented.

"6. We have renewed our demands that the Illinois mine workers honor their contract obligation to meet us in State conference—and have also renewed our offer of Aug. 4 to re-open the mines on the old wage basis until March 31, 1923, pending negotiation and arbitration of a new wage scale."

Ford's Plan to Run Corbin Shops Fails— L. & N. Says It's "Unthinkable"

HENRY FORD'S efforts, aided by Governor Groesbeck of Michigan, to obtain control of the L. & N. shops at Corbin, Ky., regarded as the key to the coal supply of the Northwest, has so far failed. Governor Morrow of Kentucky, who was understood to be lined up for the Ford proposal, did not come to Louisville for the conference between the L. & N. and Ford's representatives, but went to Corbin, the "railroad neck" between Kentucky coal fields and the Northwest, to investigate rumors of disorder. Mr. Morrow said the Ford proposal would not be accepted by the men.

Several representatives of Mr. Ford held a conference with President Mapother, of the L. & N. last week, after which Mr. Mapother declared as "unthinkable" the proposal that Mr. Ford be allowed to take over the Corbin shops and operate them with his own men. Mr. Mapother pointed out that Mr. Ford would institute a wage scale which the L. & N. would not maintain when the emergency had passed.

Peabody Predicts Failure of Priority System

"THE government's system of priority distribution of coal is bound to fail this fall and winter," F. S. Peabody, chairman of the board of the Peabody Coal Co., told 300 members of the Chicago Association of Commerce late last week. "It is to be operated on entirely the wrong basis and will lead to such confusion that the railroads will be hampered rather than helped in distribution."

Mr. Peabody said the Hoover plan thus far has operated to keep coal down to \$3.50 where cars are short and to hoist prices out of sight wherever cars are numerous. In L. & N. territory the supply of cars has been much less than 50 per cent at the mines where the \$3.50 price has been prevailing generally, whereas the Illinois Central has been giving nearly 100 per cent car service and the coal that that road has hauled to the commercial market was selling at \$10@11 on the day Mr. Peabody spoke.

"We have a mine down on the L. & N.," said Mr. Peabody. "One day recently we were allotted 15 cars. Every single one of the 15 was shipped out on a different priority order. That illustrates what is happening and will continue to happen under the Hoover system. Imagine the tremendous and complicated work of billing and switching and juggling of cars under all the priority orders that will be issued!"

He declared the mines of the country would be working within two weeks and that if they were enabled to work their limit they could produce a billion tons of coal in the next eight months. However, he said railroad service will be so hampered by one thing and another that the country will be able to get just barely enough coal to prevent industrial and domestic distress.

Mr. Peabody freely lambasted the national administration, declaring that governmental delay and interference in the strike situation had delayed a possible settlement by five weeks.

State Prods Williamson Officials—Sheriff Makes a Few Motions

GOVERNOR LEN SMALL of Illinois, under fire at a conference in Chicago late last week with important business organizations, promised he would do something about the Herrin massacre in which 19 non-union men were killed and 30 wounded June 22 after they had surrendered to a mob which attacked them at a strip mine. He said he would not declare martial law in "Bloody" Williamson County to hasten the administration of justice, however, until he had given the county officials another chance. On Friday the sheriff and county attorney announced they were doing some sleuthing but that no arrests would be made until the September term of the county grand jury. That is all that has happened. Every instigator and participant in the Herrin horror remains as free as he was the day of the slaughter.

At the Chicago conference the governor was urged by the Illinois Manufacturers' Association and the Chicago Association of Commerce to throw troops into the county at once and make a thorough and complete job of gathering evidence and pushing the administration of justice. He was also urged to call a special session of the legislature and recommend that it create a state constabulary. He did not take kindly to the idea.

The public clamor for a special session to repeal the coal miners' qualification act so that non-union men can get into the mines to dig coal has received the same sort of cool treatment by the governor. He has done nothing about it and gives no sign of doing anything. Members of the legislature have said they doubted whether a quorum could be assembled because the representatives have already drawn their annual salary of \$2,500 for this year and probably nothing would get them back to Springfield this year except extra pay.

Coal Retailers Make Survey of Stocks, Regional Reserves Compared

A SURVEY of the stocks of anthracite and bituminous coal on hand in various sections of the country as of July 8, 1922, has been made by the National Retail Coal Merchants' Association, Philadelphia, the information being collected for the use of Secretary Hoover. Based on consumption during the preceding thirty days, stocks of hard coal ranged from 60 days' supply at Albany to practically nothing in the Middle West, the tonnage tapering off as the distance from the source of supply grew greater. Bituminous coal stocks, on the other hand, were more adequate throughout Ohio, Michigan and other Middle and Central Western points than in the Eastern centers. Exceptions were New York City, with three to four weeks' supply, and New England, with 60 days' stocks.

THE SOUTHERN APPALACHIAN OPERATORS' ASSOCIATION, in a public statement, has charged the Kentucky-Tennessee Operators' Association with trying to "break up the arrangement brought about by the government to hold down the price of coal," in that the Kentucky-Tennessee operators have made a deal with union officials raising wages \$2.50 a day for day workers, 24c. a ton to tonnage men and 20 per cent extra on dead work and yardage. The Southern Appalachian Association reiterated its intention never to deal with the miners' union again.

Lewis Abandons Four State Contract to End Coal Strike Gets High Wages and Avoids Arbitration

NEGOTIATIONS between the United Mine Workers and several groups of soft coal operators, in session since Monday, Aug. 7, were brought to a conclusion on Tuesday, Aug. 15, when Lewis abandoned his policy of a four state contract or nothing and opened the way for individual producers in any field to sign up with the union.

All through the first week of the negotiations at Cleveland the union fought to gather in a skeleton representation from the old Central Competitive Field, but when the skeleton was erected it refused to stand, for a few of the more prominent of the Ohio operators, although supporting the idea of the interstate contract, refused to sign at the high wage scale demanded by the miners unless they in turn would agree to arbitrate the scale to follow after April 1, next. The conference had sufficient semblance to the real thing to hold back Farrington from delivering the Illinois miners as a district.

Late on Monday, Lewis opened the doors to any and all coal operators in Cleveland to participate in the meeting. On the Thursday previous he had ordered them out of the room, where none were allowed save from the old Central Competitive Field. For a week T. H. Watkins and a group from Central Pennsylvania had been waiting that opportunity. They had reached a tentative understanding with the union that it would give consideration to their plan, adapted from the Crews-Glasgow plan, providing for compulsory investigation and a fact finding commission. Substantial tonnages from other outlying districts and smaller tonnages within the original four states not represented in the conference, were lined up to back Mr. Watkins' proposal. When Mr. Gallagher and Mr. Robbins broke away from the negotiations because they could not force arbitration on the miners, Lewis opened the doors to the others.

AGREEMENT REACHED AFTER MIDNIGHT, MONDAY

On the basis of the tentative plan prepared by T. H. Watkins, this new conference began negotiations at once and by 1 a.m. on Tuesday had reached a temporary agreement. This was referred to the policy committee of the miners on Tuesday morning when the assembled operators also took it under advisement.

Tuesday afternoon the joint conference ratified the agreement and extended an invitation to others not present to come put their names on the dotted line, and the strike in the soft coal fields was considered broken if not ended.

At the end of the first week the situation at Cleveland may be summed up as follows:

The cut and dried program laid out by Lewis and announced from Philadelphia the previous week had been wrecked by delay. The program provided that the Ohio operators, with sufficient tonnage from the other three districts making up the old Central Competitive Field to give semblance to its continuance, were to march up and sign a new four-state contract.

The first delay was caused by the sudden interjection of a substitute plan by Ogle, known as the Crews-Glasgow plan. This stalled the conference on Monday, held it over until Wednesday with no action, and delayed matters still further on Thursday and Friday morning while negotiating with Illinois and Indiana in the hope that they would decide to come to Cleveland on the terms of the Ogle plan.

The second important delay followed the sudden and determined resistance of certain of the more important eastern Ohio operators to any settlement that did not include arbitration of the next wage scale. The determination was a distinct surprise to the miners. They had understood that no such question would be raised by the producers. President Harding's message to the Illinois operators released on Friday was important in developing this situation. In fact it was this particular matter of arbitration and the division in the ranks of the Ohio producers that finally broke up all hope on the part of the miners for their

long cherished desire for an interstate wage agreement.

A day was lost getting the legal aspects straightened out and thus a week passed with no contract, with the miners' delegates becoming impatient and the strength of the operators gaining perceptibly.

As hope of even a skeleton four-state contract was fading, Lewis had in the background a substantial tonnage of outside tonnage assembled in Cleveland ready to make terms with him. The terms they would accept were acceptable to Lewis personally, it seems, but it was essential for him to prepare the ground in advance with his own people before advocating their acceptance.

UNION POLICY DEMANDS INTERSTATE CONTRACT

To grasp the significance of the meetings at Cleveland it is essential to review the events leading up to it. The United Mine Workers have been maintaining their policy of not meeting with the coal operators unless they are permitted to do so through the medium of an interstate conference, that is a conference with the four states comprising the old Central Competitive Field. To this program the operators of Pittsburgh and of southern Ohio have not agreed, and the operators of Illinois and Indiana, willing at first to take up the old form of conference have since been reluctant to engage in such an undertaking. Eastern Ohio has from the first been willing and it might be said, anxious to participate in that form of conference, but the Mine Workers could not meet with this group alone and be consistent.

On the first of August John Lewis, then in Philadelphia, announced that he had assurances from operators in the four states comprising the old Central Competitive Field that they would answer a call for a meeting to negotiate a new scale and bring the strike to an end. He said that he had some 75,000,000 or more tons of annual production in line, and he called a conference at Cleveland for Aug. 7. He stated that the miners would not have to take any reduction in wages and that the mines would be in operation within a week or so. It was generally admitted that if he should in fact succeed in getting a bona-fide four-state contract he would have won the strike.

In accordance with schedule the meeting was convened at Cleveland on Monday, Aug. 7. The entire official roster of the miners was present with more than a hundred members of the policy committee of that organization. Many Ohio operators and a scattering representation from other fields were on hand, but it was not clear how many of those who were there purposed to participate in the conference and how many had come there simply as observers. The meeting that day was of short duration. It selected officers and adjourned to meet on Wednesday. The news leaked out that a new plan had been proposed that bid fair to bring in all the outstanding tonnage. The meeting would wait a day or so to give those not present opportunity to come.

The plan that was hopefully expected to do this was not officially given out. It was known as the Crews-Glasgow plan. It was reported to have the approval of John Lewis and A. M. Ogle, president of the National Coal Association. The general terms of the agreement were as outlined in last week's issue of *Coal Age*. Nothing came of this effort, for, according to Mr. Ogle, it "was killed by too much premature publicity." Mr. Lewis stated on Thursday that it was definitely out of the running.

The miners and operators assembled on Wednesday at 3 p.m. according to schedule. Nothing was accomplished, for they were still playing for time, waiting, in the hope that Illinois and Indiana would agree to come to Cleveland.

Thursday morning the policy committee of the miners met and in the afternoon the joint conference convened. By that time the miners had been notified that Illinois and Indiana were not coming. It is true that a ray of hope was held out by the fact that Mr. Glasgow, the chief legal ad-

visor to the miners suddenly left Cleveland by automobile bound for Toledo late Wednesday night, his purposes being to meet a committee of three operators from Illinois, who had refused to put in an appearance at Cleveland. The Illinois men were headed by Andrew Maloney, vice president of the Chicago, Wilmington & Franklin Coal Co. They were generally understood to represent the sentiment from their state that opposed making any settlement with the miners that does not embrace arbitration. No announcement of what transpired at Toledo has been vouchsafed to a waiting public. Mr. Glasgow returned to Cleveland on Friday evening and reported, but John Lewis said, nevertheless, that he could tell nothing of what had transpired. It is fair to assume that the Illinois men were told that the miners were unalterably opposed to arbitration, and that Mr. Glasgow was informed that the Illinois operators were just as determined on their part to have it invoked. Such a difference in view in no way could be compromised.

After the meeting of the policy committee on Thursday morning, Mr. Lewis made the following statement:

"The policy committee authorized the scale committee to proceed with operators of various states who are assembled here. The committee will meet with the operators prepared to swing right into developing the operators' position and working out a possible scale. A scale will be reported back for the review of the full committee.

ILLINOIS AND INDIANA HOLD BACK

"It still appears that Indiana and Illinois associations are sharply divided and engaged in prolonged debate about the advisability of entering this conference. We will be glad to have them if they will come. If they continue their arbitrary refusal it will make no difference. We will proceed with the work of this conference. In any event, we have assurances—the definite assurances—that if a scale is reached here important producers will break away from Illinois and Indiana associations and sign the scale.

"I confidently predict that when a scale is made here, that 75 per cent of all bituminous tonnage now on strike will sign the scale and return to work in one week. A settlement in the anthracite fields will naturally follow.

"The miners have won their fight and it is practically over. There is no longer a thought in any quarter that wage reductions will be imposed on the mining industry. The question here is one of procedure without undue humiliation of the operators. We have no desire to humiliate them. We only want the immediate resumption of mining, and the return to work of the men and the relief of the public."

After the meeting on Thursday afternoon Mr. Gallagher, chairman of the convention stated that "progress had been made." The names of a committee on credentials and rules were given out. This committee was as follows: S. H. Robbins, Ohio; Jas. Paisley, western Pennsylvania; F. O. Parker, Indiana, and Judge Campbell, Illinois, for the operators and P. T. Fagan, Lee Hall, John Hessler and Frank Farrington for the miners. It was stated that over 40,000,000 tons of annual production from the old Central Competitive Field was in the meeting divided as follows: Ohio, 27,000,000 tons; Pittsburgh and Freeport, 9,500,000 tons; Illinois, 1,500,000 tons; Indiana, 2,000,000 tons.

OUTLYING FIELD OPERATORS THROWN OUT

The most significant move at the meeting Friday afternoon was the ejection from the conference, on demand of the miners, of all operators *not in the old Central Competitive Field*, and the statement of John Lewis, after the meeting that the miners had not deviated in any respect from their original policy. It was to be no wage reductions and a four-state settlement, just that and nothing else.

Friday was devoted to a scale-committee meeting. The representatives for the operators on the scale committee were five from eastern Ohio, S. H. Robbins, T. K. Maher, R. L. Wildermuth, W. H. Haskins, A. A. Augustus; one from Indiana, W. A. Satterlee; one from Illinois, Richard Campbell; and one from western Pennsylvania, Jas. Paisley. There were eight from the miners, Lee Hall and Geo. Savage from Ohio, Farrington and Fishwick from Illinois, Hessler and Roberts from Indiana and Fagan and Har-

gest from Pittsburgh. John Lewis, William Green and Van Bittner for the miners, Michael Gallagher and W. L. Robison for the operators were included in the group.

The scale committee had two meetings on Friday and got nowhere. To the surprise of many and perhaps of the miners who had gained an idea that the agreement was all cut and dried, the operators registered a demand for the 1917 wage scale and arbitration of the scale for 1923. Quite naturally the miners would not consider this. There is an element among the operators present who will sign anything the miners want. They were known at the Cleveland Conference as the "tonnage-hungry crowd." They were not in harmony with any move to hold back a settlement for such little matters (so they viewed them) as an agreement to arbitrate or investigate. They said, "Let the next contract take care of itself. Time enough for that when the time comes." The debate within the operators' ranks has been going on all week to the impatience of the miners, who think that they have won and want signatures on a contract so that they can go to work. This sentiment is expressed both at the mines and at the Cleveland Conference.

The position taken and so firmly held by the Illinois operators against settlement without arbitration, has had a profound influence on many of the operators of Ohio and western Pennsylvania who are attending the meeting. Publication Friday night of the letter from President Harding to the Illinois operators sustaining their stand put heart in those who are holding for that kind of settlement and made the miners furious.

Instead of holding a joint scale meeting, the miners and operators met separately on Saturday morning. It was quite apparent to the small army of observers about the hotel corridors that something was wrong, that things were not going according to schedule. Ohio interests substantially responsible for the bringing of the meeting together suddenly developed a powerful desire to force arbitration on the miners. To persist in that stand meant a break-up of the conference.

CONFERENCE DISPOSES OF LEGAL COMPLICATIONS

Another question loomed large when Friday night word was received that the government would look on an interstate agreement as possibly illegal; that is, in contravention of the Sherman law. This complication was taken up by some of the operators as a means of stalling the proceedings, it appeared, but John Lewis got around the trouble by agreeing that whatever agreement and scale was signed would be between the United Mine Workers, and the operators as individuals. On this point the conference, on adjourning at 5 in the afternoon, issued the following statement, signed by Lewis and Gallagher:

"In order to allay the misapprehension which exists in some quarters as to the purpose of the meeting of operators and miners now in session in the City of Cleveland, Ohio, this statement is issued.

"We are assembled for the purpose of negotiating, if possible, a new wage agreement between the representatives of the United Mine Workers and the individual operating interests represented in this meeting. The conference is in no sense what may be termed a four-state conference and does not undertake to represent the operators of any particular state or district or any operating interests not represented herein. Its sole purpose is to promote a mutuality of understanding as between the operators participating and the representatives of their employees.

"This statement is the joint action of the meeting assembled."

This was interpreted, despite the assertions of the labor leaders that it bore no such significance, as a distinct concession on the part of the miners. It said in so many words that there was no longer a Central Competitive Field. It was explained that the miners could and would agree on a base scale for that district and that this would preserve the form of the old contract, and that the operators would simply be called on to sign as individuals. This legal hurdle having been surmounted, the conference adjourned until Monday morning.

Contract Negotiated and Signed at Cleveland Conference

Following is the scale report approved at the Cleveland conference Aug. 15, 1922:

Report of the sub-scale committee Aug. 14, 1922:

(1) All mines of operators represented here in this joint conference which are now on strike, are to be opened immediately upon the execution of supplementary contracts extending to March 31, 1923. The terms, provisions and conditions of the contracts affecting such mines are to be as they respectively existed on March 31, 1922, except as to renewal or continuation clauses in such contracts.

(2) The participants of this conference agree to send and this conference invites the bituminous coal operators of the United States to send representative delegates from coal producing districts or from substantial groups of operators, which delegates shall as far as possible be representative of the bituminous coal industry of the United States; such delegates to assemble in joint conference in Cleveland, Oct. 2, 1922. This joint conference shall appoint a commission of equal numbers of representative operators and miners, which commission shall formulate a method to be followed by the bituminous coal industry in the negotiation of wage scale agreements to become effective April 1, 1923, and the method so formulated shall be reported to the joint conference to be held Jan. 3, 1923, as hereinafter provided.

(3) The joint conference convening Oct. 2 shall further select a committee of inquiry, the members of which shall be of commanding public reputation for character and ability, and whose personnel shall be approved by the President of the United States. The duty of this committee shall be to develop promptly all of the pertinent facts in regard to the industry for the benefit alike of the public, the operators, and the mine workers. Such investigation shall include every phase of the industry deemed material by the committee of inquiry and such committee shall be furnished with all information desired and aided in every manner possible by the operators and miners alike.

In the event such joint conference shall fail to agree upon the members of such committee of inquiry by Oct. 10, 1922, it shall petition the President of the United States to appoint the members thereof in his discretion and in the event of a vacancy the President is requested to fill same by appointment. The cost of such committee of inquiry shall be paid by the industry, one-half by the operators participating in the joint conference and one-half by the United Mine Workers of America. Such committee after developing all the facts shall make such recommendations

as it may deem proper and advisable and shall so far as possible embody these recommendations in a report to be submitted to the joint conference to be convened Jan. 3, 1923, as hereinafter provided.

In order to reach a final and proper determination of the controversy in the bituminous coal industry for the benefit of the miners and operators and the public as well, the following principal points are presented for consideration by the committee of inquiry: The wage rate in any district shall, as far as reasonable, be properly competitive within the mining industry and shall at the same time be fully compensatory to the miners, being sufficient to afford not only a living wage but also to allow reasonable opportunity for accumulating savings. The encouragement of a proper spirit of obligation and responsibility on the part of all parties for contractual obligations and the establishment of proper machinery, both local and national, for prompt determination and settlement of any points of dispute and of any local state or district contracts, without resorting to strike or lockout.

The determination of a proper policy to encourage efficiency of operation, not only on the part of mine management in the mechanical operation of the mines, but also on the part of individual miners in the performance of their daily work.

4. The participants in this conference agree to send, and this convention invites the bituminous coal operators of the United States to send representative delegates from coal producing districts, or from substantial groups of coal operators which delegates shall as far as possible be representative of the bituminous coal industry of the United States, such delegates to meet in joint conference Jan. 3, 1923, at such place as may be designated by joint conference held Oct. 2, 1922. This joint conference shall receive the report of the committee appointed in conformity with paragraph 2, and shall finally determine the method to be followed by the participants in the conference in the negotiation of wage scale agreements to become effective April 1, 1923, to the end that new wage scale agreements to be effective April 1, 1923, shall be determined upon as speedily as practicable and further strikes be thereby avoided. The method of negotiating wage scale agreements which shall be determined upon by joint conference shall provide that such machinery as is created by it to develop a new wage scale agreement shall commence to function not later than Jan. 8, 1923. The wage scale agreement concluded by such machinery shall be effective April 1, 1923, and shall be in effect during such time as it may determine.

Watkins Praises Cleveland Conference Reason Restored, He Says

At the adjournment of the conference on Tuesday T. H. Watkins said: "As the result of conciliatory efforts inaugurated by President Harding at the Washington conference a constructive agreement has at last come out of the Cleveland meeting. The Central Competitive Field conference to which we attribute most of our past difficulties was definitely broken up and abandoned yesterday and the meeting was thrown open to operators and miners from every district in the United States. The method of renewing contracts expiring March 31, 1923, is left to a joint committee of miners and operators which will report on Jan. 3, 1923. All parties have engaged themselves to every effort to promote an amicable settlement and equitable wages next spring. The outstanding feature of the new agreement was the incorporation of a clause providing for the election of a commission of inquiry composed of prominent and unbiased citizens instructed to make a most exhaustive investigation of the whole industry and to lay down recommendations on which future voluntary agreements can be negotiated on sound economic lines between the operators and the miners. For the first time in the coal industry important labor leaders and employers have joined together in a crisis and voluntarily set up the machinery not only for a resumption of work but for the establishment of a public tribunal before whom they engage themselves to appear with all the facts of the industrial activities of both parties. The recommendations of this commission are to be the guide for necessary steps toward a permanent solution as well as for future agreements negotiated without interference or compulsion except as both sides must bow to the powerful influence of opinion of a well informed public. The document means that reason has been restored. The exercise of force whether through strike, compulsory awards, or arbitrary procedure, has no place in the program upon which we have agreed. Compulsory arbitration has failed too often in recent industrial crises to offer any hope of effectiveness in a situation which requires a basic solution, not merely a reconciliation of immediate differences. We believe that the door has been opened to a new era in the coal industry in which the con-

suming public as well as those producing coal will have access to the essential facts of the industry and will be an influence in guiding it into more peaceful channels.

Anthracite Negotiations To Be Resumed on August 17 at Philadelphia

EVIDENCE that the union is slowly yielding to the pressure of public opinion is found in the sudden interest taken in the anthracite situation. On Friday, Aug. 11, John Lewis wired the Mayor of Scranton in the hard coal region saying that the miners were ready to again meet the operators to discuss a new contract. He said:

"Replying to your wire, representatives of the United Mine Workers are not making anthracite negotiations secondary to bituminous negotiations, despite all reports to the contrary. We have understood attitude of anthracite operators to be that they would refuse to make any settlement in advance of base being made in bituminous. If this is not now true, and it is developed that anthracite operators are ready to go into direct negotiations with the United Mine Workers on the basis of the old wage scale and demands of the Shamokin convention, we will be glad to attend a joint conference on any date designated by the anthracite operators' representatives."

Mr. Warriner lost no time in making reply, asking Mr. Lewis to meet the anthracite operators in Philadelphia on Wednesday, Aug. 16.

The meeting has been postponed until Thursday, Aug. 17, to give the union officials time to finish their business at Cleveland.

NEARLY ALL IMPORTANT OPERATIONS in Nova Scotia were closed on Tuesday by a strike of more than 12,000 miners. Five thousand Cape Breton workers at a mass meeting at Glace Bay and another large meeting at New Waterford repudiated the agreement which their officers made with the operators and declared the strike. Other fields joined, thus tying up a source of supply that has been utilized by the United States since early in the present strike.

The companies' offer raised wages from \$2.85 to \$3.25, and contract rates 10 per cent, about 20 per cent below the wages of 1921, which the miners are asking.

Coal Price Legislation May Supplant Voluntary Control, Hoover Asserts—Lake Shipments Speeded Up

FORECASTING legislation aimed to control the price and distribution of coal during the emergency this winter, Secretary Hoover, on Tuesday, Aug. 15, said: "If the control over prices and distribution is maintained, Congress must provide legislation." It is impracticable, he said, "to try to continue the control indefinitely on a voluntary basis. While 60 or 70 per cent are always willing to do the square thing it is not fair to them to have the remainder in a position to profit by taking advantage of the situation. The legislation necessary has not been worked out. A number of alternatives are under consideration but no decision will be reached until the depth of the problem is known."

In discussing the co-operation he had received in the control of prices and distribution, Secretary Hoover said he had been given 100 per cent co-operation in the smokeless field, and almost as good a performance in Virginia and other parts of West Virginia.

Advices reaching Washington are that British gas coal arriving in New York is not readily salable. It also has been found that no coal rates are in effect from New York to inland points.

The problem of expediting coal shipments to the upper Great Lakes region in order to attain the necessary total movement to that territory before the close of navigation is a problem being given the serious attention of the Federal Fuel Distribution Committee. The Federal Fuel Distributor expects shipments aggregating 250,000 tons of coal will be made to the Lakes in the present week as compared with an estimated shipment of 147,000 tons for last week. A figure of 400,000 tons has been set for Lake movement during the week beginning Aug. 21.

The ability to supply urgent Lake requirements depends largely upon the coal production situation in Pennsylvania. Mines in Pennsylvania that ordinarily ship Lake coal are at present closed and the question of whether Pennsylvania coal will be available in considerable quantity for early Lake shipment hinges largely on the question whether the coal tonnage produced in Pennsylvania will be sufficient to take care of that state's own urgent needs and to allow of a supply for diversion to the Lake country. A partial solution to the problem may be found by replacing Pennsylvania Lake shipments by importations into that state of Tidewater coal from the southern Appalachian district.

The matter of fair prices for coal mined in the various Pennsylvania districts is expected to be definitely settled at a meeting in Harrisburg, Tuesday, Aug. 15, between the Pennsylvania Public Service Commission and a committee of coal operators. This meeting is a continuation of the session held in Philadelphia Friday and Saturday of last week, at which sessions the matter of definite price fixing was deferred for a few days for further investigation. The Pennsylvania Public Service Commission, which is acting as the State Fuel Administration is engaged in making an inventory of the urgent fuel requirements of that state.

A total of 13,258 cars of coal were loaded throughout the country, Friday, Aug. 11. This represents an increase of 753 car-loadings over the same day of the previous week. Loadings of 69,000 cars were reported for the first five days of last week, an increase of 5,660 cars over the corresponding number of days of the previous week. Loading of coal on the Chesapeake and Ohio system Friday amounted to 1,319 cars; on the Norfolk and Western, 2,115 cars; and on the Louisville and Nashville system, 1,609 cars. Coal loadings on these three lines represent an increase of more than 400 cars over the figures for Friday of the previous week.

An estimate of the fuel requirements for public utilities and domestic consumers in the District of Columbia has been submitted by the board of commissioners of the district.

Governor Hardwick of Georgia has designated the Georgia State Railroad Committee to act as the State Fuel Committee. A fuel distribution committee for the city of St. Louis has been appointed by Governor Hyde of that state to function under the general direction of the State

Fuel Committee. This committee will co-operate with the St. Louis Chamber of Commerce.

The necessity for giving preferred classification to smithing coal has been presented to the Fuel Distribution Committee. Various organizations representing the steam laundry trade have set forth the fuel requirements of the industry. They have been informed that each laundry should take up with its state fuel committee the matter of fuel needs.

Inquiries from Kansas and other trans-Mississippi states relative to the obtaining of coal supplies from producers in the Rocky Mountain region are being referred by the Central Fuel Committee to the coal distribution agencies in the states now producing coal in that territory.

Representatives of a large industrial concern owning its own coal mines conferred today with the fuel distribution committee relative to placing the entire coal production of this mine, subject to the orders of the fuel committee for use by essential industries.

Senator Swanson and representatives Harrison and Bland of Virginia, accompanied by Maj. Alexander Forward, State Fuel Administrator, and a delegation of prominent citizens of the state, called upon Fuel Distributor Spencer today to ask that a specific allotment of coal be turned over to the Virginia committee for distribution among essential industries in accordance with the plans of the federal organization.

The suggestion was made by the central committee that an organization for the distribution of fuel supplies be formed in Virginia similar to organizations in other states, to co-operate with the state fuel administrator.

Fuel supplies of the various branches of the federal government have for some time been fairly well assured and no especial efforts to safeguard these supplies are required just at this time. Naval fuel reserves are said to be in especially good shape.

A South Carolina delegation conferred with the fuel distributor relative to the situation in that state. The delegation declared that the matter of fuel distribution was progressing satisfactorily in South Carolina and that available fuel supplies were being distributed to those industries where the need was the most keen.

The I.C.C. on Tuesday reprimanded the carriers for confiscating coal moved under priority orders. Calling attention to the increasing frequency of this practice, the commission declared it tended to defeat the efforts of the government to insure equitable distribution of the curtailed supply of coal. The roads were ordered to refrain from such action.

National Coal Directors Meet in New York

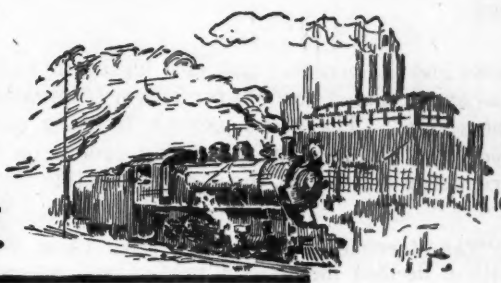
PEACE and harmony prevailed at the meeting of the board of directors of the National Coal Association in New York on Monday, Aug. 14, despite predictions to the contrary from several quarters. About 20 directors were present, mainly from the East and South. Those from the West were not able to attend because of the acute labor situations in their respective districts.

The meeting lasted all day, during the course of which many routine matters were considered and matters of policy of the National Coal Association were considered at length. After the meeting A. M. Ogle, president of the Association, said:

"It always has been and is now the policy of the National Coal Association not to interfere in any way with wage negotiations or the determination of the labor policy within any district in the bituminous coal fields. The Association does not undertake to settle strikes. This is a matter which must be determined by representatives of the several districts involved. It does undertake, however, to properly represent the bituminous industry generally in all its phases before the public."



Production and the Market



Weekly Review

A PECULIAR situation exists in the spot coal market. Prices are high but are not soaring, free coal is even more limited than a week ago, but the demand has declined apace with the amount of tonnage offering.

Procrastination has ruled the coal buyer. The Cleveland conference gave hope of resumption of mining, and consumers pared their purchases to the quick in order to be able to take advantage of the easier flow of coal when union-mined tonnage is again available. The diminution of demand has been accomplished in many cases by the curtailment or complete shut-down of plants by those who feel that this is preferable to paying the high premiums now being secured by spot coal shippers.

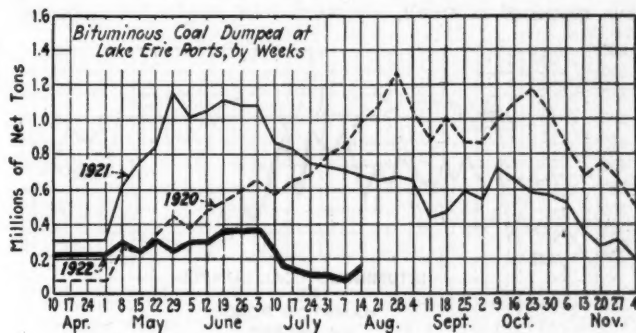
PRIORITIES RULE ON BULK OF TONNAGE MOVING

Those who must keep in operation, and this class includes the railroads and "essential" industries, are actively bidding for the meager current production that is available to the spot buyer. Priorities rule on the bulk of the tonnage moving but there is much confusion as yet in carrying out these orders and railroad confiscations are heavy. The situation is further complicated by the rail trouble and consumers on the preferred list are often forced to pay the going price to replace delayed shipments of coal.

There is little of this spot coal available, for, although production is increasing, most of it is needed on priorities. Spot coal prices have risen to an average of \$6.66 per net ton at the mines, *Coal Age Index* on Aug. 14 going to 550 as compared with 511 for the previous week. This is a rise of 39 points for the index and 48c. in the average price for the week. The coal commission at Washington, recognizing unusual expenses of certain operators now producing, has sanctioned an increase from the original \$3.50 Hoover level to \$4.50 for New River and \$4.75 for Kanawha.

Railroads are functioning better but the traffic congestion is still acute and lack of motive power is ham-

pering dispatch of loads and the placement of empties. The roads are gradually enforcing the priority orders but State and Federal committees have not yet clamped the lid down on high prices. The fear, however, that a settlement of the strike may find them with a large tonnage of high-priced coal en route is causing jobbers to be extremely cautious. Orders are taken on a day-to-day basis now, and there is less tendency to exact all that the consumer might pay. Quick turnovers are

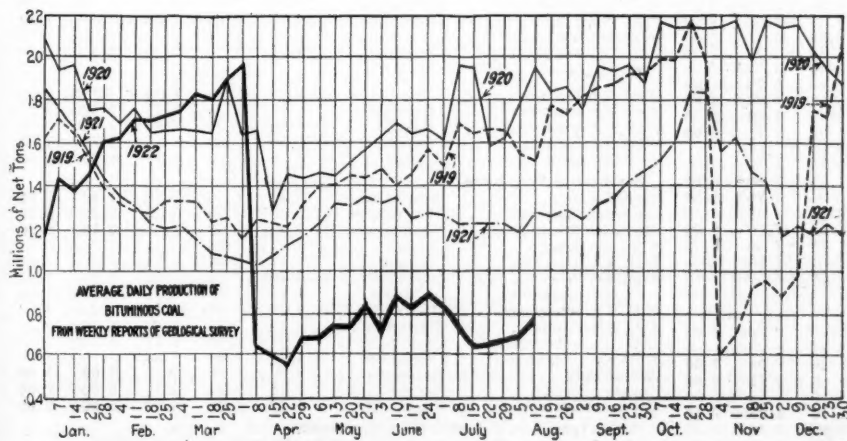


the rule and the desire for large premiums and commissions are not allowed to delay present sales.

The edge is off the market for British coals. Cargoes are arriving daily but consignees are for the most part essential industries who will be the first served after the strike. As this British coal is relatively higher priced than our own fuel and the British market is sold well into September there will be few additional orders placed since mining will be resumed at an early date.

The situation at Hampton Roads is slowly improving, as the railroads are able to clear their lines. An embargo has been placed on exports, and bunkers are due for a slump as priorities leave little tonnage for vessel fuel. The accumulation at the piers is running down and tonnage awaiting cargo is heavy.

Shippers are being deluged with requests for quota-



Estimates of Production

(Net tons)

BITUMINOUS

Week Ended	1921	1922
July 22 (b).....	7,380,000	3,692,000
July 29 (b).....	7,319,000	3,952,000
Aug. 5 (a).....	7,186,000	4,309,000
Daily average.....	1,198,000	718,000
Calendar year.....	231,915,000	207,606,000
Daily av. cal. yr.....	1,270,000	1,131,000

ANTHRACITE

July 22.....	1,837,000	27,000
July 29.....	1,750,000	27,000
Aug. 5 (a).....	1,772,000	27,000

COKE

July 29 (b).....	45,000	112,000
Aug. 5 (a).....	55,000	116,000
Calendar year.....	3,617,000	3,744,000

(a) Subject to revision. (b) Revised from last report.

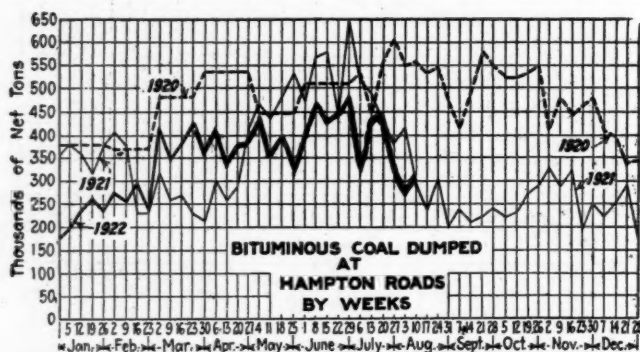
tions and the prospect that coal mining is to be resumed has brought many orders for delivery "immediately after the strike." The price question is being carefully left open and shippers are accepting orders on that basis, promising delivery at the earliest possible moment.

BITUMINOUS

"The nineteenth week of the strike (Aug. 7-12) opened with a decided increase in production," according to the Geological Survey. "Returns so far received indicate an output of soft coal of about 4,800,000 net tons, or 500,000 tons more than the week before. The increase is due to gradual improvement in traffic conditions on the railroads serving non-union fields and also, but only in a very small way, to increased production in fields hitherto throttled by the strike. Despite this increase in bituminous coal output the nineteenth week finds production still about 550,000 tons below the level reached before the shopmen's strike.

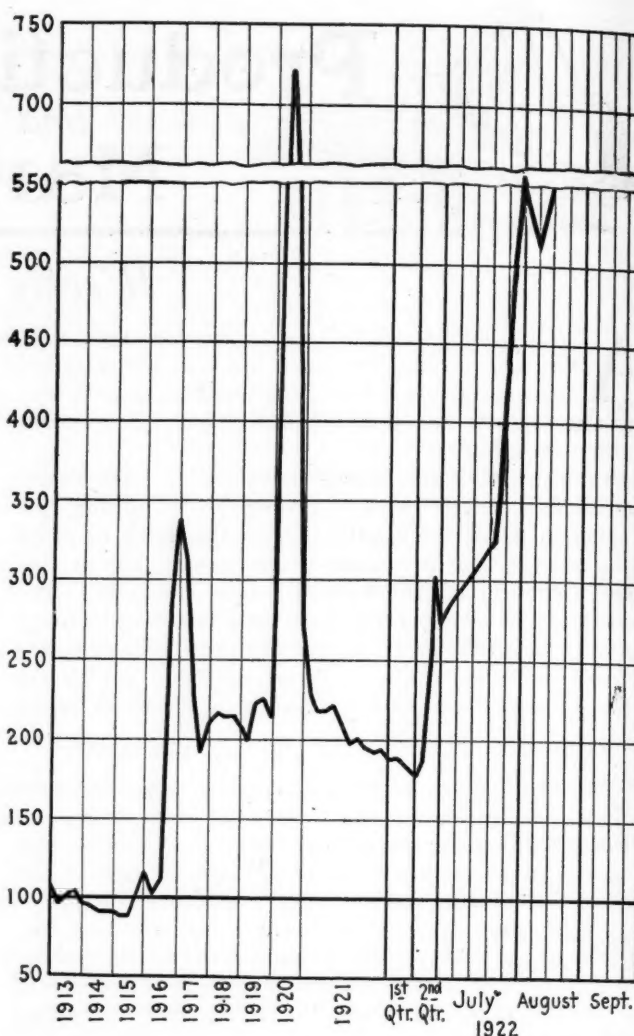
"The total output of all coal, anthracite and bituminous, in round numbers is 4,880,000 tons; in the corresponding week of 1921, 7,771,000 tons of bituminous coal and 1,772,000 tons of anthracite were produced.

"Detailed records of shipments from each district indicate that the addition to the coal supply from mines that have reopened is small, although four weeks have elapsed



since the invitation to resume production was extended. There have been only very small gains in a few of the stronger organized districts.

"In the middle and southern Appalachians, which have been the principal sources of supply, production has been curtailed by the shopmen's strike but has gradually increased during August. The unorganized districts of this territory has gained, by relief from traffic congestion, about 200,000 tons over the output of last week. The non-union and partly organized fields of this region are now furnishing about 41 per cent of the total output in the United States, whereas they furnished 54 per cent in the week



Coal Age Index 550, Week of Aug. 14, 1922. Average spot price for same period \$6.66. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. (Pittsburgh District, Illinois, Indiana and eastern Ohio prices not included in figures for last week.)

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern		Market Quoted	July 17, 1922	July 31, 1922	Aug. 7, 1922	Aug. 14, 1922†
Smokeless lump.....	Columbus....	\$3.95	\$8.50	\$5.60	\$3.75@	\$8.50
Smokeless mine run.....	Columbus....	3.75	8.15	5.25	3.50@	8.00
Smokeless screenings.....	Columbus....	3.45	8.00	5.10	3.25@	8.00
Smokeless lump.....	Chicago....	4.15	8.10	6.35	3.75@	8.00
Smokeless mine run.....	Chicago....	4.15	8.10	6.25	3.50@	8.00
Smokeless lump.....	Cincinnati....	4.40	5.90	5.90	3.75@	7.50
Smokeless mine run.....	Cincinnati....	3.80	5.50	5.50	3.50@	7.50
Smokeless screenings.....	Cincinnati....	3.25	5.15	5.40	3.25@	7.50
*Smokeless mine run.....	Boston....	6.55	8.15	8.90	9.25@	11.00
Clearfield mine run.....	Boston....	3.40	6.00	6.90	7.00@	9.00
Cambrina mine run.....	Boston....	3.85	6.65	7.40	8.50@	9.50
Somerset mine run.....	Boston....	3.50	6.00	6.90	7.75@	9.00
Pool 9 (Super.Low Vol.)..	New York....	4.75	8.25	8.25	7.50@	9.00
Pool 9 (Super.Low Vol.)..	Philadelphia..	4.50	7.25	7.25	7.00@	8.00
Pool 10 (H.Gr.Low Vol.)..	New York....	4.80	8.00	8.00	7.75@	8.50
Pool 10 (H.Gr.Low Vol.)..	Philadelphia..	4.55	8.00	8.00	7.50@	8.50
Pool 10 (H.Gr.Low Vol.)..	Baltimore....	4.50	7.25	7.25	7.00@	8.00
Pool 11 (Low Vol.).....	New York....	4.60	7.75	7.25	7.50@	7.75
Pool 11 (Low Vol.).....	Philadelphia..	4.40	8.00	7.85	7.50@	8.25
Pool 11 (Low Vol.).....	Baltimore....	4.30	7.75	7.25	6.50@	7.75
High-Volatile, Eastern		Market Quoted	July 17, 1922	July 31, 1922	Aug. 7, 1922	Aug. 14, 1922†
Pool 54-64 (Gas and St.)..	New York....	4.70	7.75	7.75	7.50@	7.75
Pool 54-64 (Gas and St.)..	Philadelphia..	4.40	8.15	7.85	7.50@	8.00
Pool 54-64 (Gas and St.)..	Baltimore....	4.10	7.90	6.25	6.00@	7.00
Kanawha lump.....	Columbus....	4.00	8.00	5.60	3.75@	8.00
Kanawha mine run.....	Columbus....	3.65	7.75	5.50	3.50@	7.50
Kanawha screenings.....	Columbus....	3.40	7.75	5.10	3.25@	7.50
W. Va. Splint lump.....	Cincinnati....	4.25	6.40	5.85	3.75@	7.50
W. Va. Gas lump.....	Cincinnati....	4.25	6.40	5.85	3.75@	7.50
W. Va. mine run.....	Cincinnati....	4.00	6.00	5.50	3.50@	7.50
Midwest		Market Quoted	July 17, 1922	July 31, 1922	Aug. 7, 1922	Aug. 14, 1922†
W. Va. screenings.....	Cincinnati....	\$3.60	\$5.90	\$5.10	\$3.25@	\$7.50
Hocking lump.....	Columbus....	3.80	8.15	5.85	3.75@	8.50
Hocking mine run.....	Columbus....	3.70	7.75	5.50	3.50@	8.00
Hocking screenings.....	Columbus....	3.40	7.75	5.35	3.25@	7.50
Pitts. No. 8 lump.....	Cleveland....	4.75	8.50	7.85	7.00@	7.60
Pitts. No. 8 mine run.....	Cleveland....	4.40	8.50	7.85	7.00@	7.60
Pitts. No. 8 screenings.....	Cleveland....	4.40	8.50	7.85	7.00@	7.60
South and Southwest		Market Quoted	July 17, 1922	July 31, 1922	Aug. 7, 1922	Aug. 14, 1922†
Big Seam lump.....	Birmingham..	2.35	4.50	3.50	3.50@	6.00
Big Seam mine run.....	Birmingham..	2.20	4.50	3.20	2.20@	5.50
Big Seam (washed).....	Birmingham..	2.40	4.50	3.50	2.50@	5.50
S. E. Ky. lump.....	Chicago....	4.15	8.00	6.35	3.75@	8.00
S. E. Ky. mine run.....	Chicago....	4.15	8.00	6.25	3.60@	8.00
S. E. Ky. lump.....	Louisville....	4.40	7.75	5.85	3.75@	8.00
S. E. Ky. mine run.....	Louisville....	4.15	7.75	5.75	3.50@	8.00
S. E. Ky. screenings.....	Louisville....	4.25	7.60	5.60	3.25@	8.00
S. E. Ky. lump.....	Cincinnati....	4.25	7.75	5.85	3.75@	7.50
S. E. Ky. mine run.....	Cincinnati....	4.00	6.00	5.75	3.50@	7.50
S. E. Ky. screenings.....	Cincinnati....	3.75	5.90	5.60	3.25@	7.50
Kansas lump.....	Kansas City..	5.00	5.00	5.25	5.00@	7.00
Kansas mine run.....	Kansas City..	4.75	4.75	5.15	5.00@	7.00
Kansas screenings.....	Kansas City..	4.25	4.25	4.90	5.00@	7.00

*Gross tons, f. o. b. vessel, Hampton Roads.

†Advances over previous week shown in heavy type, declines in italics.

NOTE—Smokeless prices now include New River and Pocahontas.

ended June 24. The districts in Pennsylvania and the central competitive field and those west of the Mississippi have been less affected by traffic congestion. Changes in shipments there measure better the direct influences of efforts to overcome the strike. In Pennsylvania the output since the last week of July has increased somewhat. Union districts in West Virginia also reported slight increases."

The Northwest is in desperate need of coal and the coal distribution committee has issued priority orders on cargo and vessel fuel in an effort to get a supply to the upper docks as soon as possible. Dumpings at Lake Erie ports during the week ended Aug. 14 recovered from the extreme slump of the week before. The total dumped was 147,358 net tons—123,121 tons cargo and 24,237 tons vessel fuel—as compared with 92,747 tons during the week ended Aug. 7. The total movement for the season is only 4,776,684 tons; last year's figure was 14,789,941 tons.

Tidewater dumpings at Hampton Roads increased during the week ended Aug. 10 as the carriers have been able to clear up some of the congestion between the mines and piers. The dumpings were 306,258 net tons as compared with 277,072 in the previous week.

July witnessed a decline in Tidewater dumpings. In comparison with June the total dropped 21 per cent, principally caused by decreased movement from Hampton Roads to New England.

TIDEWATER SHIPMENTS FOR JULY, 1922 (In Thousands of Net Tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charles-ton	July Total	June Total
Coastwise to New England.....	16	9	..	663	22	710	874
Exports.....	..	1	..	58	21	80	104
Bunker.....	86	11	3	147	8	255	301
Inside capes.....	..	32	21	113	..	166	290
Other tonnage.....	113	503	10	626	764
Total, July.....	215	53	24	1,484	61	1,837	..
Total, June.....	269	51	33	1,945	35	..	2,333

Because the strike has curtailed shipments to the three Northern ports—New York, Philadelphia and Baltimore—the cumulative Tidewater movement from Jan. 1 to July 31 was much below normal. Shipments during the first seven months of 1922 were 29 per cent less than the average for the corresponding period in the three years preceding. The chief element in the decrease was a sharp decline in exports. Shipments to New England were greater than in any of the 3 years preceding, because of the effort of New England consumers to obtain water-borne coal to replace dwindling all-rail shipments.

CUMULATIVE TIDEWATER SHIPMENTS, JANUARY-JULY, 1918-1922

Destination	1918	1919	1920	1921	1922
Coastwise to New England ...	4,674,000	5,824,000	4,347,000	6,548,000	..
Exports.....	3,406,000	10,748,000	8,294,000	1,230,000	..
Bunker.....	3,891,000	4,895,000	5,577,000	2,914,000	..
Inside capes.....	1,984,000	1,828,000	1,802,000	1,813,000	..
Other tonnage.....	6,061,000	4,860,000	4,177,000	4,663,000	..
Total.....	20,016,000	28,155,000	24,197,000	17,168,000	..

ANTHRACITE

The hard coal situation is unchanged. Production is nil except for a weekly output of less than 30,000 tons of steam coals dredged from the rivers. Pea coal is all that is moving and even this is slowing down as railroads are reserving tonnage at the mines for their own use.

Anthracite wage questions will be discussed in the coming conference which follows the Cleveland soft-coal negotiations. An early resumption of hard-coal production is likely to result therefrom.

COKE

Production of beehive coke continues to increase slowly. During the week ended Aug. 5, 116,000 net tons were produced, 4,000 tons in excess of the previous week. There is less spot coke offering, however, demand is lighter and there is more dickering over price as users are forced to close rather than pay any further premiums. Only those foundries with most pressing business are attempting to remain open.

The growing scarcity of coal was reflected in a decrease in the output of byproduct coke in July. The total production for the month was 2,486,000 net tons against 2,580,000 tons in June.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec. 1921	Jan. 1 to Apr. 1, 1922 Inclusive	April 3 to July 29, 1922 Inclusive	Week Ended July 29
U. S. Total.....	45.6	55.7
Non-Union				
Alabama.....	63.5	64.6	76.0	91.1
Somerset County.....	55.5	74.9	45.0	50.3
Panhandle, W. Va.....	55.3	51.3	44.5	41.8
Westmoreland.....	54.9	58.8	83.4	92.0
Virginia.....	54.8	59.9	76.2	50.9
Harlan.....	53.3	54.8	45.1	20.2
Hazard.....	51.7	58.4	52.1	21.3
Pocahontas.....	49.8	60.0	70.8	44.4
Tug River.....	48.1	63.7	75.9	39.1
Logan.....	47.6	61.1	67.8	19.8
Cumberland-Piedmont.....	46.6	50.6	16.8	22.7
Winding Gulf.....	45.7	64.3	67.8	34.6
Kenova-Thacker.....	38.2	54.3	73.8	41.2
N. E. Kentucky.....	32.9	47.7	51.2	15.1
New River.....	24.3	37.9	29.7	27.3
Union				
Oklahoma.....	63.9	59.6	14.5	11.9
Iowa.....	57.4	78.4	0.0	0.0
Ohio, Eastern.....	52.6	46.6	0.0	0.0
Missouri.....	50.7	64.8	2.3	5.0
Illinois.....	44.8	54.5	0.0	0.0
Kansas.....	42.0	54.9	16.7	21.8
Indiana.....	41.4	53.8	0.0	0.0
Pittsburgh.....	41.2	39.8	0.0	0.0
Central Pennsylvania.....	39.1	50.2	11.9	11.8
Fairmont.....	35.3	44.0	4.2	4.1
Western Kentucky.....	32.5	37.7	62.1	52.9
Pittsburgh*.....	30.4	31.9	0.0	0.0
Kanawha.....	26.0	13.0	5.8	6.1
Ohio, Southern.....	22.9	24.3	0.0	0.0

* Rail and river mines combined

† Rail mines

‡ Union in 1921, non-union in 1922

Car Loadings and Surpluses

Cars loaded:	All Cars	Coal Cars
Week ended July 29, 1922.....	859,733	76,374
Previous week.....	861,124	76,060
Same week a year ago.....	795,432	149,439
Surplus cars:		
July 22, 1922.....	203,322	141,430
July 15, 1922.....	233,029	151,727
Same date a year ago.....	350,000	170,000

In spite of the decrease as compared with June, the July rate of output was within 3 per cent of the average for 1920, the year of maximum output. The byproduct plants of the country continue to be called upon to make good the deficit of beehive coke caused by the strike in the Connells-ville region and elsewhere. The beehive ovens produced only 450,000 tons in June.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE (Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average.....	1,870,000	2,764,000	4,634,000
1918 Monthly average.....	2,166,000	2,540,000	4,706,000
1919 Monthly average.....	2,095,000	1,638,000	3,733,000
1920 Monthly average.....	2,565,000	1,748,000	4,313,000
1921 Monthly average.....	1,660,000	463,000	2,123,000
April, 1922.....	2,208,000	528,000	2,736,000
May, 1922.....	2,537,000	432,000	2,969,000
June, 1922.....	2,580,000	458,000	3,038,000
July, 1922.....	2,486,000	450,000	2,936,000

The coal consumed in the manufacture of coke in July is estimated at 4,281,000 tons, of which 3,571,000 tons was charged in byproduct ovens and 710,000 in beehive ovens.

That this rate of consumption cannot be continued long unless the production of coal is greatly increased over the present rate, will be apparent from the fact that the coal used in coke manufacture during July was equal to 28 per cent of all the coal mined that month. This was possible because the byproduct ovens were able to draw upon coal held in storage.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coa Consumed
1917 Monthly average.....	2,625,000	4,354,000	6,979,000
1918 Monthly average.....	3,072,000	4,014,000	7,086,000
1919 Monthly average.....	2,988,000	2,478,000	5,466,000
1920 Monthly average.....	3,684,000	2,665,000	6,349,000
1921 Monthly average.....	2,385,000	731,000 (a)	3,116,000
April, 1922.....	3,172,000 (a)	833,000 (a)	4,005,000
May, 1922.....	3,645,000 (a)	681,000 (a)	4,326,000
June, 1922.....	3,707,000 (a)	722,000 (a)	4,429,000
July, 1922.....	3,571,000 (a)	710,000 (a)	4,281,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

American Orders Have Bolstered British Prices And Quieted Threatened Labor Troubles

THE advance of British prices as a result of the American demand has been little short of miraculous. Recently pits were talking of closing down and practically no signs of the American demand were forthcoming. Prices of steam coal in Wales are now nearly 10s. higher. The extent of the American demand in Wales is not known, as no figures of much value are disclosed. It is evident, however, that ships to carry 300,000 tons were ready at Cardiff to be sent off before Aug. 10.

The American buyers were able to obtain their coal comparatively cheaply because they arrived on the market at a time when colliery owners were at a loss to know how to keep their pits open and how to dispose of their accumulated stocks.

Production during the week ended July 29 was 4,989,000 gross tons as cabled to *Coal Age*. This is a considerable increase from the previous week's figure of 4,391,000 tons.

Coincident with the demand from the United States there sprang up a brisk trade with South America, which had disappeared since 1914. At the same time merchants on the Continent, who had been delaying getting their autumn requirements in the hope of a further fall in prices, hurried their orders, so as to get them placed before the American boom caused a further rise.

There is no sign of any labor trouble. The miners do not know the destination of the particular coal they are producing, and, apart from that, they are not at all anxious to find any cause for stoppage.

Some hundreds of thousands of tons of gas and coking coals have been contracted for in northern England, and the entire Durham field is operating at top pressure to cope with the orders. As a result Northumberland and Durham pits are entirely booked up until the end of September. European contracts include one of 20,000 tons of gas coals at 22s. 3d. for Bergen and 60,000 tons of special gas coals at 26s. for Amsterdam.

On the whole, the attitude in North England has been transformed from

pessimism into optimism. The present position is that business is restricted only by the need of further shipping facilities.

French Production During May

Production of coal in France in May was divided as follows between the various coal fields:

	Metric Tons
Nord and Pas-de-Calais	631,803
Non-devastated mines	621,993
Devastated mines	620,434
Centre coal fields	356,387
Southern coal fields	10,146
Western coal fields	8,459
Eastern area (small Ronchamp coal field)	346,169
Lorraine coal field	
Total	2,595,391

IMPORTS IN MAY AND YEAR TO DATE

	May, 1922	January-May, 1922
Sarre	255,942	1,374,533
Great Britain	968,136	5,100,996
Belgium	198,737	1,019,918
United States	3,194	13,380
Germany	552,514	1,651,975
Netherlands	79,886	342,432
Various countries	39	3,272
Totals	2,058,448	9,506,506

Sarre coal production in May was 846,862 metric tons.

Hampton Roads Pier Situation

	Week Ended Aug. 3	Aug. 10
N. & W. Piers, Lamberts Point:		
Cars on hand	766	808
Tons on hand	46,796	49,220
Tons dumped	105,752	131,863
Tonnage waiting	59,975	71,500
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	660	512
Tons on hand	35,850	28,550
Tons dumped	70,203	80,861
Tonnage waiting	78,938	64,450
C. & O. Piers, Newport News:		
Cars on hand	418	408
Tons on hand	22,000	20,000
Tons dumped	71,431	60,721
Tonnage waiting	11,455	23,115

Inland Demand Cuts Supply at Roads

The market was quieter last week than during the earlier period of the strikes, although quotations remained firm at advanced levels. From the spectacular point of view emphasis has shifted from the off-shore to the inland demand on account of the numer-

ous appeals for fuel which have besieged shippers at Norfolk since the lack of coal in Virginia and North Carolina became acute.

Movement has been in about the same proportion as in the previous week on all three railroads. Stocks at Tide have contracted slightly, but have hovered very close to 100,000 tons for the greater part of the time.

Coal Paragraphs from Foreign Lands

ITALY—The market is dull. Imports during May totaled 1,043,000 tons, of which 52,000 tons were from the United States, 662,000 from the United Kingdom, 318,000 from Germany.

Cardiff steam first is now 42s. 6d., according to a cable to *Coal Age*. Last week's quotation was 40s. 9d.

GERMANY—New coal prices, caused by the increase in miners' wages which came into force on July 1, show an addition of about 30 per cent. Fat coal now costs about 1,200 m. per ton at the mine, which is about 100 times above the pre-war figure. Before the war the price was 12@12½ m. per ton. Other coals have advanced relatively.

Production in the Ruhr district for the week ended July 29 was 1,802,000 metric tons, according to a cable to *Coal Age*, 2,000 tons in excess of the previous week's output. The International Miners' Congress is sending members to the Reparation Commission to request a modification of the Spa coal convention.

Export Clearances, Week Ended Aug. 10, 1922

FROM HAMPTON ROADS:	
For Atlantic Islands:	Tons
Nor. S.S. Fram, for St. Lucia	4,004
For Cuba:	
Br. S.S. Berwindvale, for Havana	7,735
Am. Sch. Edna M. McKnight	1,874

Pier and Bunker Prices, Gross Tons

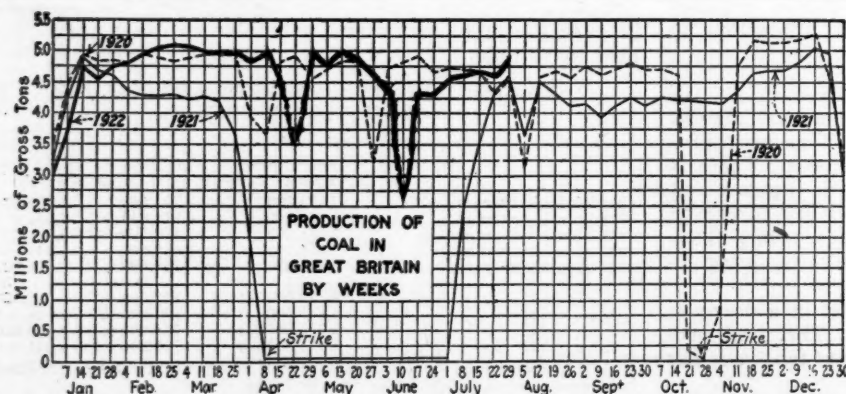
PIERS	
	Aug. 5
Pool 10, New York	\$12.00@12.25
Pool 11, New York	\$11.00@11.25
Pool 1, Hamp. Rds.	9.25@10.00
Pool 5-6-7 Hamp. Rds.	9.25@10.00
Pool 2, Hamp. Rds.	9.25@10.00

BUNKERS	
	12.25@12.50
Pool 10, New York	11.25@11.50
Pool 11, New York	9.25@10.00
Pool 1, Hamp. Rds.	9.25@10.00
Pool 2, Hamp. Rds.	38s. 6d.
Welsh, Gibraltar	57s. 6d. f.o.b.
Welsh, Rio de Janeiro	38s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.
Welsh, La Plata	38s. t.i.b.
Welsh, Genoa	38s. 6d. f.o.b.
Welsh, Algiers	65s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.
Welsh, Bahia	42s. 6d. f.a.s.
Welsh, Maderia	40s. 6d. f.a.s.
Welsh, Teneriffe	42s. 6d. f.o.b.
Welsh, Malta	40s. 6d. f.a.s.
Welsh, Las Palmas	38s. f.o.b.
Welsh, Naples	52s. 6d. f.o.b.
Welsh, Rosario	53s. 9d. f.o.b.
Welsh, Singapore	50s. f.o.b.
Welsh, Constantinople	50s. t.i.b.
Welsh, St. Michaels	44s. f.o.b.
Welsh, Alexandria	46s. 6d.
Welsh, Port Said	50s. f.o.b.
Welsh, Buenos Aires	30s. 6d. t.i.b.
Durham, Antwerp	26s. f.o.b.
Durham, Hamburg	

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age	
Cardiff:	Aug. 5
Admiralty, Large	29s. @ 31s.
Steam, Small	21s. 6d. @ 22s. 6d.
Newcastle:	Aug. 12½
Best Steams	25s. @ 26s.
Best Gas	25s.
Best Bunkers	25s.

Advances over previous week shown in heavy type; declines in italics.



North Atlantic

Non-Essential Industries

Hot After Meager Tonnage

Production Increases, but Little Coal Left for Spot Market—British and Southern Tonnage Aid—Impending Strike Settlement Loosed Flood of Orders and Inquiries.

NON-ESSENTIAL industries are active bidders in the spot market. Demand is exceedingly strong and receipts are heavier, but quotations are not soaring as there is more of a tendency to observe fair prices. State committees are securing a few cars for needy points, railroads are taking much of the current output and the remaining spot tonnage is exceedingly light. Cargoes of British coal are now arriving. Southern coals, via water from Hampton Roads, are also moving better, filling a few gaps in the market.

Coal houses are being deluged with inquiries and many orders are being placed, for delivery after the settlement of the strike, but the question of price is being left open.

NEW YORK

The arrival of the first cargo of British coal in this harbor during the present strike was the feature of last week's market. This arrived in an Italian vessel and was reported as having been sold to a public utility corporation. It was followed a couple of days later in the week by another vessel which docked in Brooklyn. Other cargoes of foreign coal are expected almost daily.

Offers of British coal are being made to local dealers, and one house received an offer of Scotch coal at about \$11, c.i.f., or about \$12 alongside in small barges. Quotations for British coal, c.i.f., for late August or September delivery, ranged about as follows: Durham, first class, 42s.; Durham, second class, 40s.; Northumberland, unscreened, 40s., and Admiralty, 49s.

While the demand was strong and coal moving in better shape, there was a tendency to keep prices nearer the Hoover schedules, although no quotations were available as low as those figures. There were 429 cars at the local piers on Aug. 11, and it was estimated that less than 25 per cent of these were available for spot buyers.

The state fuel commission is busy formulating plans for seeing that all public utilities and essentials secure coal. The railroads are heavy buyers.

Demand along the line is much stronger than at Tidewater. Southern coals are coming forward in slightly heavier volume, with quotations around \$13, this harbor, in small barges. B. R. & P. coals are quoted \$7.75@\$8, with similar quotations for Pittsburgh.

UPPER POTOMAC

Virtually all mines in the Upper Potomac region on the West Virginia side of the river between Thomas and Piedmont, are now in operation. On the Maryland side fewer mines are at work owing to the lack of co-operation of Maryland authorities. Production is being steadily increased and is averaging about half of normal. A few mines in the Georges Creek region also are operating. Railroad fuel is moving at about \$3.50 a ton but the quotation generally on coal in the various pools is about \$6.

PHILADELPHIA

That reserves of consumers are being fast eaten into is shown by an increase of direct inquiries to shipping houses. Many of these concerns have held out almost to the last minute and it is with the greatest reluctance that they make small purchases at the current figures.

Prices have not materially deviated from last week's quotations. Generally, though, when no grade is specified the price has been about \$8, with Pool 10 classification taking the top figure.

As yet priority orders have not become effective, although it does seem to have had the effect of automatically giving better shipments to utilities. Usually such concerns having contracts have been in receipt of more coal. While this has been of considerable help, yet it has not been sufficient to permit the larger users of coal to keep out of the spot market, and many of them have recently paid the maximum prices to keep a margin of safety in stocks.

The edge, at least temporarily, seems to have been taken off the foreign coal market. Of course rising prices of coal and freights on the other side has had something to do with it, but no doubt purchasers are also desirous of having some of the coal in hand to make certain that it will meet their requirements.

FAIRMONT

By the end of the first week of August there had been so much improvement that conditions were better than they had been at any time since the beginning of the strike. More mines were at work—200—more men were at work and production was larger. Approximately 5,000 miners are now producing coal. Transportation conditions are also proving to be conducive to a larger output.

CENTRAL PENNSYLVANIA

There are approximately 1,000 more men at work than before troops and state police were sent into the field. A noticeable increase in production is reported. The output has gone from 600 to 700 cars per day.

No important developments marked the progress of the strike last week. A 100 per cent car distribution is reported on all railroads entering the field. On the South Fork branch of the P. R.R., 392 cars were loaded during the first five days of August, with the number

slightly on the increase each succeeding week. The first week of July showed 113 cars on the first five days.

The Pennsylvania company is repairing freight cars as fast as they are turned into the shops at Altoona. Coal operators and officers of the Central Pennsylvania Coal Producers' Association attended the conference with Governor Sproul in Philadelphia at the end of the week.

BALTIMORE

With the Maryland coal committee beginning to function the market remains stiff and rather acute in spots. The commission is headed by W. M. Malloy, of the Public Service Commission, but the practical director is O. L. Eaton, of the B. & O., who arrived this week to act as vice-chairman. He found calls from a number of Maryland towns which claimed to be without fuel for industries or hotels, etc., and this was taken care of through some operators who could spare a car or so of coal here and there.

Governor Ritchie appealed by wire to John L. Lewis, president of the United Mine Workers, to attempt to settle the Maryland situation immediately after the Cleveland conference. He received a reply that action would be taken in case the situation following the Cleveland conference warranted such a move for the Maryland field. Despite union statements to the contrary, the B. & O., the Pennsylvania and Western Maryland officials continue to report more than enough cars in all producing territories to move all coal offered.

Prices remain high. Consumers are entirely willing to pay \$6@\$8 a net ton, f.o.b. mines, for the coal that is offering. At that the coal is cheaper than the English coals now arriving here, which commands \$10@\$12 at the piers.

West

SALT LAKE CITY

Utah needs no fuel administration, Governor Chas. R. Mabey has told Secretary Hoover. Utah is producing 73 per cent of the normal output of coal.

Domestic consumers are asking for coal. There is, however no rush. There appears to be enough cars and the strike situation is about the same. The soldiers are still in charge.

July production was 374,934 net tons. In July last year the figures were 273,092, but in 1920 they were a round half-million.

KANSAS CITY

The peaceful situation that existed in the Kansas coal field a short time ago has taken wings and the lamb-like demeanor of Howatt followers has changed. Very little coal is being produced in that stall. The long continued strike is causing steam plants to turn to oil and a great many are installing oil burning equipment. The Kansas City, Mo., municipal water plants will change over to oil at once and a great many manufacturing plants are also changing to oil.

Coal is harder to obtain than at any time since the strike and the price is anything the seller asks. Some Kansas mill coal sold for \$7 f.o.b. mines this week.

Anthracite

Early Scarcity Is Inevitable Substitute Fuels Are Urged

Household Consumer Fully Awakened to Gravity of Situation—Retailers Besieged With Orders—Stocks Being Rationed—Pea Coal Disappears as Railroads Take Mine Stocks for Steam Substitute.

THE public is now thoroughly aware of the serious aspect of the situation for the winter. Retailers are besieged with orders, but are doing little else than file these for attention at the earliest possible moment. Domestic stocks are being rationed out only to hospitals, hotels and other urgent points of consumption. Even pea coal, which has been in plentiful supply, is disappearing from the market, as mine stocks are being held for the hard-coal burning railroads.

Substitution of other fuels is now being urged in the East, for the first part of the season at least, as it is realized that even if mining is resumed in the near future the needs of the Northwest would take much of the current production well into the time when domestic coal fires are lighted.

NEW YORK

With the naming of a fuel commission to look after the distribution of coal the public is thoroughly aroused to conditions and consumers are realizing the mistake they made in the early spring by not putting away their next winter's coal.

It is possible that coal will be doled out in bags by some retail dealers, whose yards are in the poorer sections, the consumer taking it away himself. This system has been followed in some instances during previous coal shortages. Retail dealers' books are carrying many orders but no one knows when to expect delivery.

A few loaded boats of pea were reported as afloat in the harbor but their number was so negligible as to amount to practically nothing. The companies have nothing to offer to the trade and most independent operators are keeping their supplies for their own use at the mines.

Some river barley was offered here toward the end of the week at \$2.50@2.75.

BALTIMORE

The situation continues to cause much worry. Many consumers will undoubtedly have to face the early weeks of cold weather without hard coal, no matter how soon mining begins. Some dealers are advising consumers to take

lump soft coal, or the English coals coming in. Few of the household heating plants are adapted to use soft coal without great trouble.

The State Forestry Division is endeavoring to get rural users of hard coal to take wood, offering to see that supplies are furnished. If this was successful in full it would save a consumption of about 600,000 tons of anthracite. At last the public is awakening to the real dangers of a coal shortage. As the cold weather approaches both consumers and coal men grow nervous. It is far from a healthy situation.

PHILADELPHIA

The appointment of a fuel commission by Governor Sproul seems to have brought home to the consumer the extreme shortage that is likely to prevail. When it is considered that sixty days will bring us into general coal burning weather, the wonder is expressed where the coal is going to come from, even though mining could be resumed at once.

Consumers begin to realize how helpless the dealer is to assist them, even though he does promise to make deliveries when coal is received.

The movement of pea coal into the cellars goes on actively, and shipments from the companies are somewhat light, although they have heavy tonnages on order, in fact it is believed that the amount actually ordered will exceed the tonnage in stock. A good deal of this coal is going to distant territories, who, while they do not ordinarily use much of this size, yet began placing orders for it somewhat earlier than local retailers.

There seems now something more definite than mere rumor upon which to base a decision to have but two sizes of family coal when shipments are resumed. It is declared that the larger companies have already adjusted the screens at the breakers with this idea in view.

In steam coal, which means river barley, the quotations are still very little changed, \$2.60@3, although a small quantity of low-grade material has been moved at \$1.85, being coal with a larger percentage of pebbles than usual.

BOSTON

A few last clean-up cargoes of pea are being received, but otherwise shipments are practically nil. Retail dealers are reduced to extremely small reserves of prepared sizes, but coal is still being distributed through usual channels and thus far no dealer of any size has yet thrown up his hands.

The wholesale trade feels that when mining is resumed prepared sizes will be distributed by representatives of the producers, much as in 1918, and that no effort will be made by the administration to supplant the usual avenues of supply. The subject was gone into in great detail during the war, and it would be hard to believe the experience of that period would be thrust aside.

ANTHRACITE FIELDS

The Glen Alden Coal Co. has received permission to employ a few men on some necessary repairs to the Truesdale Colliery. A misunderstanding must have arisen with the mine workers for the men were attacked and a couple of deputy sheriffs were stoned. However, on the next day matters were straightened out.

There seems to be no present prospect of settling the suspension. The whole region is feeling the effects very badly. Bank savings are being withdrawn. Retail sales have fallen below 50 per cent of normal. Many of the men are working on outside jobs.

BUFFALO

One jobber reports some hundreds of carloads still held in storage, which he will sell at a premium of only 75c. a ton. It must be that his company has the hoarding habit in a very marked degree, or this coal would have been gone long ago. Still the consumer appears to be reconciled to the indefinite waiting.

It seems to be the idea that nothing is to be done until the bituminous miners are at work. The indifference of the men and their readiness to remain idle indefinitely at the command of their leaders is still as hard to explain as ever.

South

BIRMINGHAM

The strong demand which has prevailed for some time past is still well sustained and there is a scarcity of all grades. The bulk of the output, as anticipated, has been pretty well sold up for some weeks ahead, with several hundred cars moving daily to Western railroads and to lines operating in the district. The industrial demand and the call from Municipal plants and small utilities in every direction is large in the aggregate.

Prices are generally a matter of election of the seller, and mine run and washed range \$4.50@\$5.50 mines, with little or no regard to quality. Spot domestic is equally as scarce as commercial coal and dealers generally are manifesting activity such as has not been shown in a long while, but are making little progress in placing orders.

Despite the car shortage and crippled transportation conditions, record production is being maintained, running to 375,000 and 380,000 tons during the last three weeks. With an ample supply of equipment for loading and speedier service this figure could be increased easily 50,000 to 75,000 tons per week. The lines are showing steady improvement in service.

VIRGINIA

Not much more than 50 per cent of potential capacity is being produced. Any increase in production has been limited to the mines on the N. & W. and the Southern, mines on the former road having increased their production to the extent of 15 per cent and on the Southern by 5 per cent.

Chicago and Midwest

Abnormality Is Normal Now in Midwest Region

Conditions So Uncertain for So Long
That Nobody Worries About Markets—Kentucky Coal Remains Above
\$8—Buyers Wait for Strike End.

THE Midwest is getting hardened to upset conditions. Uncertainty in everything to do with the coal trade has calloused coal traders to a point of calmness. Prices remain high and coal is almost impossible to get for open market except from western Kentucky, whose output sold at the end of the week for more than \$8 in most cities hereabout. Buyers are now so confident of the end of the strike that they are buying only where it is absolutely essential. Jobbers are declining to sign up with producers for any more coal except on a day-to-day basis.

The machinery of controlling distribution of coal from the Kentucky fields has not got well into its stride. The result is a large part of the output is still going into the open market. Priority orders are growing more numerous every day but even this is uncertain because of conflicting efforts of those supposed to grant priority. Car supply continues to be limited.

A good deal of the coal produced by the eastern Kentucky fields is going to railroads and utilities at the Hoover prices. West Kentucky continues recalcitrant and while its committee wrangles with Washington to get an increase in the Hoover maximum, most of that region's coal sells higher than \$8 at the mine.

CHICAGO

A state of uncertainty has prevailed so long on this market that it now is accepted as normal. Hence its continuance during the past week while the strike gave signs of ending at the Cleveland conference, upset nobody. A little coal from Kentucky was traded here every day at prices that wavered around \$8@9 all week, closing Saturday at \$8@8.50. At no time was there any heavy trading nor was the market level. Wild prices were quoted from time to time to unwise buyers, resulting in an occasional sale at \$11 or even \$12.

Practically no coal other than a small volume from western Kentucky moved through this market except one batch of Pittsburgh No. 8, which was offered on Wednesday first at \$9 and finally as low as \$7.50 before it was cleaned up on Friday. A scattering few cars of

West Virginia high-volatile also appeared and sold at about the same levels. Practically no smokeless or eastern Kentucky figured in the week's business.

A great deal of interest was stirred up by various business organizations who raised their voices over the approaching fuel famine in the city. Dealers ended a canvas showing practically empty yards and a survey of plants showed only a few days' supply left. Chicago is pleading with Washington for freer shipments to this region.

SOUTHERN ILLINOIS

Mules are going down the mines, presumably for the purpose of cleaning up, but it is likely they will stay down. At least, that seems to be the impression among the miners. Several mines are in first-class condition to produce coal in the event of a settlement but others may need several weeks to get in shape. Everybody is optimistic. There is no trouble in the Carterville or Duquoin fields. There is some activity in the Mt. Olive and in the Standard districts toward cleaning up.

The sheriffs of Madison and St. Clair counties have been busy trying to prevent clashes between striking miners and the loaders of coal from the slack piles. Belleville loading has been stopped by the miners. Loading continues at one Collinsville pile, protected by a U. S. District Court injunction.

INDIANAPOLIS

The call for coal in Indiana is increasing but there is no coal. The demand is due to indications of an end to the strike and to the fact that the industries which have been skimping along on low reserves for weeks, wish to get in on the ground floor. No contracts are being made. Prices are as high as they likely will get.

During the past two weeks there has been a revival of business in some of the staple lines in the state and this is calling for more fuel. Many plants have had to close down during the past week because of lack of coal. Utilities appear to be suffering, but not to the point of shut-downs. Some are burning cobs. The state operation of strip mines has resulted in a total of only eight cars, a disappointment to Governor McCray, who expected a larger production in the eight days the State has had control.

WESTERN KENTUCKY

Although priority orders are controlling the movement, use and destination of coal, and billing is refused by the coal handling roads, except where shipped on such orders, the price question is not being policed by the railroads, with the result that about the lowest quotations heard on western Kentucky fuel are around \$7 and ranging upward to \$8 and higher. This is a drop from \$9@10 from July 5.

Western Kentucky has never agreed to Hoover prices. For several days past an effort has been made to secure

a \$4.25 maximum, and press reports from Washington, indicate a favorable consideration, but no definite action. It is claimed that Washington has been considering \$3.75 as a mine run maximum. Production is somewhat better. There is a ready demand for all coal that can be produced at \$7@8 a ton, and operators are not showing much inclination to accept \$3.50. Coal moving now is for railroad and industrial use principally, and does not represent much domestic fuel.

LOUISVILLE

Regardless of conferences this week of operators, of representatives of Mr. Hoover and of the Kentucky Fuel Commission along with railroad officials, about the only change noted in the general situation is that all coal produced is moving on class 2, priority orders. Prices continue at \$7@8 in both eastern and western Kentucky, although a few producers may be maintaining the Hoover levels. Railroads finally are enforcing priority rulings, but the State and Federal boards are not controlling distribution.

Utilities and railroads are paying the \$7@8 asked, without much argument. Michigan is raising a lot of noise concerning inability to move Kentucky's production direct to Detroit, but Governor Morrow, of Kentucky, argues that Kentucky comes first. Jobbers report that they are not buying any coal or taking any chances on orders that may be countermanded if the strike blows up at Cleveland.

Discussion locally indicates that if any effort is made to refuse cars to mines which can secure priority orders, but who charge over the Hoover price, there may be an effort to secure Federal court injunctions to force equitable car distribution, on the basis that no state or Federal department has the right to endeavor to regulate prices, and that such action through misuse of the powers of the Interstate Commerce Commission are unconstitutional.

ST. LOUIS

St. Louis is almost out of coal. A little is moving in, but the situation is critical. Several small plants are running on short time and some have suspended, and it is estimated that about 5,000 tons of coal per day are being displaced in the St. Louis district by oil burners. Oil transportation is beginning to get serious. A peculiar thing about it is that the oil companies are paying \$8@10 a ton at the mine for the coal and are selling oil to non-essentials.

The domestic trade is easy and patiently waiting, but the dealers are out of coal for small essential plants and railroads are beginning to feel the pinch in a severe way.

The fuel commission has set mine prices on Missouri coal but no retail prices were set. The prices quoted at the mines on Kentucky coal range \$7@10, and Alabama, \$5.50@7, and no other coals are available.

The general impression here is that the strike will be settled within a week, but it will take another week before St. Louis will begin to get any commercial coal and the situation is such this winter that the average supply of coal will not be normal in St. Louis until next spring on account of the depleted stocks.

Eastern Inland

Buyers Reduce Orders, Awaiting Strike's End

Cut in Consumption Necessary With Lowered Spot Demand—Priorities Leave Little Free Coal—Lake Trade Will Be Aided by Issuance of Preferential Orders.

PRIORITIES rule on the bulk of the coal moving. The buyer is not bidding up the market, preferring to await the early resumption of union mining which has been assured. Demand is off, but in many cases this has been accompanied by a curtailment or complete industrial shutdown as buying had lately been largely for day-to-day consumption. Prices are a trifle softer than last week.

The Lake trade has been hard hit by the scarcity and rail congestion, but the latter is clearing slowly and the issuance of priority orders for vessel and cargo coal is designed to remedy the situation.

COLUMBUS

Operators and shippers are marking time, waiting for the results of the Cleveland conference. There is a good deal of optimism shown in producing circles and a general feeling that matters may be straightened out by the conference. The state fuel commission is functioning and only a small amount of coal is available.

Prices are erratic to the extreme. Some free coal is selling around \$6.50@8, and in some cases higher. Shipments authorized by the fuel commission are made generally at Hoover levels. So far no large user has been compelled to close down because of lack of fuel although quite a few are close to the bottom of their bins. Railroads are taking the main bulk of the production.

Quite a few Lake shippers are in the market. Offers of \$4@4.75 have not been taken up and producers are content to await developments. The H. V. docks at Toledo loaded 55,911 tons during the week ended Aug. 9, as compared with 42,101 tons the previous week. The Northwest is clamoring for coal and some priorities to insure shipments to that section are being issued.

BUFFALO

The situation here is just as quiet as ever. Jobbers who have regular understandings with reliable mine owners, are doing a ragged sort of business, with some cars one day and perhaps none the next. Others hold off, with the idea that prices will go down fast as soon as the mining settlement is made.

The more determined of the operators say that mining at former wages merely means another fight next April. It will

not answer to go on in this way indefinitely.

The price situation is as unsteady as ever. Now and then a car comes out that was bought at \$3, again one sold for \$9. Between these extremes a good average is \$7.75@8.50.

The difficulty in getting Lake fuel continues, but the fleet manages to obtain it somehow. With new crops heavy the Lake activity will need to continue.

CLEVELAND

Hope of an early settlement of the strike has caused a peculiar situation in the Cleveland market. Buying is not as strong as it was two weeks ago and consumers who are not forced to take their supplies on a day-to-day basis are delaying in the hope that they will soon be able to place orders for union-mined coal at more reasonable prices.

Industrial plants are steadily losing time through individual fuel shortages. The danger point has been reached by railroads and public utilities, and these industries are most active in seeking tonnage. Priority orders are taking an increasing volume of the non-union output and the Lake situation is being given some attention by the issuance of preferential orders for the movement of bunker coal, as well as the placing of a priority on cargo coal shipments.

Prices show a wide range, but have little significance as rail congestion and priority orders allow but little tonnage to seep through.

EASTERN OHIO

Even though the supply of available coal in the open market continues at a minimum, steam users are purposely procrastinating as to any steps looking toward replenishing their stocks because of renewed hope that mining will be resumed shortly.

Inquiries are not so numerous as several weeks ago, notwithstanding that many large industrial plants as well as railroads and public utilities are nearing the danger point of fuel scarcity. Likewise, confiscations by the railroads are becoming more frequent, evidenced particularly by the inability of consignees to get non-union coal consigned to them from West Virginia and eastern Kentucky. Congestion at Ohio River gateways continues to be the main barrier to a more healthy volume of arrivals. Receipts of bituminous coal at Cleveland during the week ended Aug. 5 slumped considerably, total arrivals being but 626 cars. This registers a decrease of 216 cars under the receipts for the week ended July 29.

Eastern Ohio stripping mines continue to produce between 30,000 and 40,000 tons per week, apparently being unable to attain the former maximum output, which some six weeks ago was averaging a little above 50,000 tons.

Spot prices have varied during the week, quotations on eastern Ohio stripping and West Virginia Panhandle, any grade, ranging \$7@7.50. Eastern

Kentucky and West Virginia were quoted \$4.50@8.00, but information in the trade is that these latter quotations are without significance because of impossibility to get this coal through. Considerable shifting as well as delays in Lake shipping are reported because of inability to get bunker coal and in isolated cases as much as \$10 has been paid.

DETROIT

With only about 300 cars arriving daily to meet requirements amounting to about 500 cars, exclusive of railroad fuel, Detroit is steadily reducing reserve stocks.

Efforts of the D. T. & I. R.R., controlled by Henry Ford, to arrange an agreement with the L. & N. under which the former might send motive power and train crews to move several hundred loaded coal cars, held back on the Benner Fork division in the vicinity of Corbin, Ky., have been unsuccessful, the management of the L. & N. taking the attitude that it would be an injustice to other parts of the country to permit this exclusive movement of the coal to Michigan.

Word comes from Washington that Michigan's fuel administrator, who presented priority orders aggregating more than 300,000 tons, has been promised the immediate shipment of consignments amounting to 83,750 tons.

So far the various fuel administrators have taken no steps to obtain coal to supply the needs of household consumers, all efforts being for the relief of utilities.

PITTSBURGH

The Pittsburgh Coal Producers' Association, as a body, refused to have anything to do with the Cleveland convention, representation at the convention from western Pennsylvania being merely of a few scattered mines. The evident intention of the district as a whole is to resume operations when feasible on an open-shop basis. The common remark is that in general the districts represented at Cleveland were moved by financial considerations. A similar incentive, it is said, does not obtain with the typical Pittsburgh district operator.

The only important market in the past week has been in Connellsville steam grade, the price for which has ruled steady at a range of \$7@7.50, being a shade stiffer than a week ago, but easier than late in July, when the top price of \$8.50 had been reached. Occasionally a little Connellsville by-product coal is bought at \$8@8.50 but there is little demand, consumers considering the price prohibitive. Westmoreland gas coal brings \$8.50@9, being taken chiefly by gas companies.

While reports continue to be made of gains in coal production in the Connellsville region, it seems to be beyond question that the offerings in the open market are lighter than 30 days ago.

NORTHERN PANHANDLE

Although production is not as large as it was before the rail strike, it is being maintained at about 40,000 tons a week. Additional mines have not been able to resume operations, however. Prices are still above the Hoover level but appear to be declining somewhat, the general average being about \$6 per ton.

Northwest

Upper Lake Region Is in Desperate Need of Coal

Hopefully Awaits Coal Now on Way from Kentucky—Survey Shows Supply on Hand Is Gone—Propaganda Works Well—Prices Are Climbing.

WITH docks swept almost clean and with supplies everywhere down to a few days' life, the Northwest anxiously awaits the arrival of the first cargoes which the government's new distribution system is going to deliver. Already 530 carloads are ordered for it under the first priority for the Upper Lakes states. These 530 cars are beginning to come out of the Harlan, Hazard and other Kentucky fields for shipment through the Ore & Coal Exchange at Cleveland.

The Northwest needs it. Surveys by sections show the region is in a desperate plight which good propaganda and much activity by politicians have described effectively to the country. Prices are climbing to \$8@\$9 but there is practically no free coal and contract orders are being filled in small dribs.

DULUTH

Dock operators and dealers on this market are being besieged on all sides for supplies when they have no free coal. What little remains is being held for consumers entitled to priority. They are endeavoring to supply 1,000,000 tons to threshing outfits over the northwest. That, with bunkering coal for the steamers, the railroads and other consumers in the favored class will have to come from the allotment to be furnished the northwest.

A survey taken by a committee of the Duluth Chamber of Commerce showed that fuel supplies of many industrial consumers are nearing exhaustion. The report of the committee set out that seventeen mining companies operating on the Minnesota ranges are short 1,000,000 tons. The hard coal situation at Duluth and over the northwest was claimed in the report to be desperate. Record shipments for the season were made from Duluth and Superior docks during July, the total being 27,969 cars. Last year 26,664 cars were loaded out in June and 13,448 cars in July. Only 109,474 cars of coal were received on this market from the East during July. That included 96,524 tons of bituminous and 11,950 tons of anthracite. Dock receipts from the opening of navigation to July 31 aggregated only 397,310 tons. Compared with the same period last year, anthracite receipts decreased 788,461 tons and bituminous receipts 5,445,174 tons. Shipments of 19,000

tons of bituminous were made by boats from the docks here to Lake Michigan ports during July on railroad account, bringing the tonnage shipped for the season to that quarter up to 219,500 tons.

MINNEAPOLIS

Political propaganda on behalf of the coal requirements of the Northwest may help win priorities and real service for this section. The governor of this state urged the government to take over the coal carrying roads from the non-union fields to the lower Lake Erie ports. Whether a sequence or coincidence, immediately after the governor's statement was made came a Federal promise of concentrating on these coal-carrying roads to get service.

Members of the coal trade insist that regardless of the settlement of the miners' wage situation, the big difficulty will continue to be the failure of the railroads to perform their functions. Senator Kellogg and Governor Preus, both of Minnesota are campaigning for coal. Nothing is being neglected that might possibly serve to bring about fuel deliveries. A coal survey is being

made through the state. A great many large users and public service concerns are reported very low on fuel, some with less than three weeks' store.

MILWAUKEE

Milwaukee's coal market is at a complete standstill. Only two cargoes have been received thus far in August, and the docks are about swept clean. Everybody is clamoring for coal, especially public utilities. The state fuel administration is functioning and strenuous efforts are being made to bring about urgency consignments of coal. One priority shipment of forty cars to the Milwaukee Gas Co. was confiscated en route by an eastern railway. A small cargo of soft coal is on the way here from Quebec, and other small steamers plying in the wheat trade to Montreal may bring additional cargoes.

Receipts of coal thus far in August aggregate 7,300 tons of soft coal, making the season's receipts to date 781,360 tons, against 1,604,424 tons during the same period last year. Up to this time last year 547,400 tons of anthracite had been received over the docks. Not a cargo has been received this year.

The price list on hard coal has not been changed as yet, as none is to be had. What the price will be when coal commences to move is a matter of conjecture. An offer of anthracite from Vancouver, B. C., at \$18 a ton has been refused. Soft coal prices continue at the 50c. advance noted last week.

New England

Receipts from Hampton Roads Cut by Priorities

High Quotations Rumored for Coal Diverted from New England—Only Slight Interest Shown in Market—Buyers Profess Ability to Await Lower-Cost Coal.

ASIDE from diminished receipts on contract there is practically not a thing doing in this market. Sundry quotations are rumored, as high as \$13 having been asked for small lots on cars Boston or Providence, but in most instances there is so little free coal that no one is much interested. Rehandlers are applying coal on orders entered into some weeks or months ago, and at this end thus far there has been no attempted interference.

Buyers have reasonably comfortable reserves and are by no means panicky over conditions. There is talk of replacing anthracite prepared sizes with bituminous for household use, and the public is now being advised to buy soft coal enough for two months.

Fewer transactions are possible at Hampton Roads because priorities have

begun to eat into current shipments at the disposal of the usual trade agencies. While machinery for a new distribution of cars went into effect Aug. 7, it is by no means working smoothly, and there is much confusion and prospect of detention charges to worry shippers who are anxious to do their utmost on their own unfulfilled obligations. At the same time it is reliably said that free coal changed hands the last week \$10.50 f.o.b. vessel at the Virginia terminals.

As priority cars reach Hampton Roads we begin to get light on the actual working of the Hoover program. Coal that would have come to New England for necessary purposes is already being consigned to railroads other than in this territory, and contrary to situations in 1917 and 1918 when contractors were deprived of coal that it might be sent elsewhere on a lower price, coal is now being enticed away by a much higher figure.

In any case, no emergency coal is yet in sight for New England. Those in the trade are beginning to feel that the output will soon be increased either through some understanding reached with the unions or that the operators will themselves resume operations regardless of union leaders. So long, however, as meetings and conferences are continued such action will be very difficult, for not only do such "negotiations" tend to hold operators back but they also influence mine workers themselves to hold out further in the hope some arrangement can be made on the peak wage basis.

Cincinnati Gateway

Growing Effect of Priorities Reduces Spot Offerings

Prices Are Lower as Free Tonnage Has Moved Out—Lakes Hampered by Priority Orders—Walkout Cripples L. & N. Service.

THE movement of coal through this gateway the past week was a little heavier, despite the confusion of establishing priority plans for the distribution of fuel. Under anticipated priority conditions but little coal was placed for Lake shipment, the L. & N. refusing to set cars for loading for the Lakes, although insistent operators with contract orders besieged the offices in desperation. Harlan and Bell counties are tied up by a walkout of the Big Four brotherhoods employed by the Cumberland Division of the L. & N.

Prices have been depressed by the growing effect of priority orders. There is, however, some coal now coming through, loaded before the issuance of these orders, and delayed by the transportation trouble. This is regarded as the last of the high-priced product.

CINCINNATI

For the week ended Aug. 5 the rail movement into and through Cincinnati was better and showed considerable recovery on the part of the coal roads. Total interchange of cars was 13,481, of which 5,842 were coal loads, a matter of 534 cars increase over the movement of the preceding week for coal. Of this increase the L. & N. contributed 375 cars, a fine record, taking into account handicaps. The C. & O. contributed 156 cars and the N. & W., 3 cars.

Congestion at distributing centers is being gradually overcome regardless of strike conditions and this is freeing some coal loaded before the issuance of priority orders. This has turned into the market some coal which has sold from \$7.50@9, which is regarded as the last of the high-priced product.

It is understood that the fuel committee organization is taking into account production costs and is permitting an additional charge in some cases, notably the New River district, of \$1 additional to counter overhead costs, and that a few bituminous producers are advanced \$1.25 over Hoover fair prices for the same reason.

HIGH-VOLATILE FIELDS

LOGAN AND THACKER

Logan mines are not getting more than one-tenth of the car supply wanted. The trouble is not local but is due to the difficulty in getting empties back

from Western connections. Market conditions are highly conducive to a large production in this territory if the coal could only be moved. Many contract customers have been deprived of a supply; this is especially true of the steel industry.

Transportation conditions are being gradually improved in the Kenova-Thacker field. Mines are now averaging about four days a week. Improvement is due in part to the increased number of shopmen at work on the N. & W. and to a larger flow of empties back from the West. Priority orders are interrupting the usual flow of coal.

NORTHEASTERN KENTUCKY

Unfavorable transportation conditions are still barring many mines from operating at a time when market conditions make it necessary to produce a large tonnage. The first few days of August, however, saw a slight improvement in conditions. Labor is available for a large output if mines can only secure an adequate supply of cars.

KANAWHA

Although mines are still laboring under transportation difficulties, yet the output remains at about 60,000 tons per week, with more than half the mines in the region still in operation and with a prospect that additional mines will resume under more favorable transportation conditions. The market is most urgent and inquiries cannot be taken care of owing to priority orders.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Although all New River mines are operating, it is only after a fashion, owing to the difficulty experienced in getting cars and in getting coal moved. This is holding production down to a little over 100,000 tons a week. Production is gradually getting back to a normal basis, however, owing to an increase in transportation facilities. The movement to Tidewater has been small. With tonnage still so low prices continue on a rather high level, although government regulations are having a tendency to force a decline.

The Virginian has been handicapped by lack of motive power and production in the Winding Gulf for a time was reduced to a point below 100,000 tons a week, but with a slight improvement in transportation facilities mines are managing to increase the output. Tidewater shipments have been greatly restricted.

POCAHONTAS AND TUG RIVER

With transportation conditions on the N. & W. somewhat improved, it is possible for the Pocahontas field to increase its output, the increase within a week amounting to about 60,000 tons. Shopmen from other roads are now at work on the N. & W. and that is making it possible to use more motive power.

Mines are working approximately three days a week. The Tidewater movement has been slow.

All Tug River mines are running, but not on a full-time basis, owing to the difficulty in securing cars. Production is limited to about 62,000 tons per week, with signs pointing to an increase as lines are opened for the movement of coal and as cars are moved into the field more freely from the West.

Coke

UNIONTOWN

Miners in the Connellsville region face the prospect of seeing at least a portion of the union miners returning to work under a patched-up agreement with themselves no nearer their goal than the day they walked out.

Meantime production is increasing steadily as is also the number of dynamite outrages. Labor, mostly negroes from the Southern fields, are arriving daily and these are being distributed at the various plants, apparently carrying out a policy of reorganizing labor forces. The condition of the striking miners in some cases has reached the point of a crisis. At the Palmer tent colony an epidemic of typhoid fever broke out which resulted in a score being sent to the hospital.

The market remains high with no attempt yet made at restrictions of price or diverting of tonnage to priority consumers. Railroads are now the principal buyers and sales are being made at \$7@7.50 for all tonnage offered. The coke market remains a missing quantity.

CONNELLSVILLE

Coke offerings in the open market appear to be somewhat decreased, as compared with a fortnight or a month ago, although in many quarters it is thought that production is a trifle heavier. Demand has decreased, and there is less insistence in such demand as does appear, the prospective buyers being more particular as to price. Blast furnaces disappeared from the market long ago and the miscellaneous consumers are largely out of the market. The demand comes from a relatively small proportion of the foundries that usually take Connellsville coke. Some foundries are evidently curtailing operations or closing entirely, only those with the most pressing business endeavoring to keep in operation.

Ordinary foundry coke is quotable at about \$15, a slight easing off. Occasionally a particularly good brand may bring a trifle more, while coke not up to standard is at a discount. So-called "furnace coke" is offered around \$14, this being in substance merely an unguaranteed foundry coke, as blast furnaces are not buying coke.

BUFFALO

Jobbers are hardly able to get anything more than a quotation from the beehive districts. A little coke can be had now, though, where there was none formerly. The figures run up to \$15 for 72-hr. Connellsville foundry, \$13 for 48-hr. furnace and \$9@10 for chestnut size, adding \$3.28 for freight to Buffalo.

News Items From Field and Trade

ALABAMA

Forty-nine applicants for mine positions took the semi-annual examination before Chief Mine Inspector C. H. Nesbitt and his board recently. Certificates were issued to eighteen who successfully stood the examination for positions as first-class mine foremen, two to second-class mine foremen and three to men who wished to fill positions as fire bosses.

Roy R. Cox, of Montgomery, has been appointed fuel administrator for Alabama. At a recent meeting of Alabama operators to discuss and take action on the plan of the government for the distribution of coal and restriction of unfair prices a district committee was appointed to maintain the proper co-operation along these lines from the mine owners in this district, composed of S. L. Yerkes, chairman; Geo. F. Peter, Hugh Morrow, A. B. Aldridge and Erskine Ramsay.

The Black Fox Coal & Iron Co. has been incorporated at Gadsden, for the development of about 6,000 acres of coal and ore lands in Jackson and DeKalb counties. It is understood that the company is making an effort to acquire mineral properties in adjoining counties with an acreage of approximately 100,000, and plans to build a railroad a distance of about four miles to strike the Tennessee River, docks to be constructed at the terminus of the line. The capital stock is given as \$840,000 and the home office is to be located in Cincinnati. Sheridan W. Baker, Santa Rosa, Cal., is said to be the principal stockholder.

COLORADO

Much criticism has arisen because the new advisory coal committee fixed coal prices that allow 10c. more profit per ton than did the fuel administration during the Garfield regime. George A. Collins, a member of the committee, refused to approve the scale. Other members are James Dalrymple, state coal mine inspector, J. Ralph Young, H. W. Bennett, T. C. Hitchings, D. Harrington, W. D. McDonald and W. E. Russell. Lignite prices recommended are \$3.90 for lump, \$1.80 for slack and \$2.85 for mine run. In Boulder County the scale is \$1 higher.

ILLINOIS

The Sangamon County Mining Co. is installing improvements at its mine near Lincoln during the strike. The entire plant is to be electrified with the exception of the steam hoist. The electrification is made possible by the extension of a power line north to Atlanta past the company plant.

Gordon Mason purchased the Morganfield property of the Producers' Coal Co., at commissioner's sale, for \$33,500.

The Harrisburg Coal Mining Co., Harrisburg, Ill., has completed the installation of three Krehbiel Co. loading booms at its Blue Bird mine.

The Donk Bros. Coal & Coke Co., with main offices in St. Louis and mines at Thermal and Maryville, have opened a branch office at Old Colony Bldg., Chicago. A. H. Speulda, for sometime sales manager for the Rialto Coal Co., has been put in charge of the new office.

Announcement has been made by the West-Virginia Coal Co., St. Louis, of the purchase of the New Marissa mine near Marissa. The newly acquired property is an up to date operation with a daily output of approximately 1,500 tons. With the addition of the mine, the company now controls fourteen mines in Illinois and one in Kentucky.

H. A. Requa, sales manager for the Columbus Mining Co. at Chicago, spent the first week in August finding out by personal observation that the stories of fuel famine now gripping Wisconsin from docks to inland rural communities are eminently true.

F. S. Peabody, chairman of the board of the Peabody Coal Co., has returned to Chicago after a trip to New York and to Eastern mining fields. He said there is no use expecting any anthracite to reach the West this winter. Eastern industries which need it more keenly than Western householders will see to that. He said the last culm

bank has been cleaned up and the last anthracite-silted river bottom dredged.

Joseph Harrington, well known as the designer of the Harrington stoker, has joined the Mitchell & Dillon Coal Co., as combustion engineer.

INDIANA

The discontinued branch of the C. & E. I. Railroad, known as the "Coal-Road" in western Indiana, has been bought by a number of business men living along the line and, according to report, will soon be in operation again for the benefit of a number of small industries that have been cut off from railroad service.

KENTUCKY

Better market conditions have resulted in new mining companies beginning to spring up again. Some of these are small companies which will probably operate wagon mines, and others will operate mines which have been practically abandoned. No large new developments are being reported. Among recently chartered companies are the Togo Mining Co., Providence; Thomas O. Long, George W. Williams; Mrs. O. L. Shelton; Lem Kellou; Finnis Williams; Lem King, all of Providence. New Straight Creek Collieries, Inc.; Pinville; M. J. Moss, Sr., M. J. Moss, Jr., A. G. Patterson, Meadows Harlan Coal Co.; Pineville, F. M. Meadows, A. D. Meadows and H. L. Martin. South Side Coal Co., Providence, Jeff McConnell, J. T. White and S. K. Holland. Laurel Gem Coal Co., Amber, W. G. Black, R. E. Quinn and Read P. Black.

The Hazard Coal Operators' Association at the meeting in Cincinnati, approved the appointment of Captain J. T. Hatfield as a member of the distribution committee. The members said that the Hoover rules would be lived up to with the backing of the organization.

MICHIGAN

Charles F. Dunn, wholesaler in Detroit for some years, has been selected as Wayne County fuel commissioner, following the declining of the position by Charles A. Deau, head of the Pittmans & Dean Co. To assist Mr. Dunn the Detroit Board of Commerce has designated an auxiliary committee, which includes Ford R. Cate, president of the Michigan Wholesale Coal Dealers' Association; Eli J. Barkume, president of Detroit Coal Exchange, E. W. Brunk, of the Michigan Central freight department and J. W. Brennan, purchasing agent of the Detroit Edison.

MINNESOTA

W. A. Prinsen, secretary of the Northwest Coal Dock Operators' Association, Minneapolis, has been named an assistant Federal fuel administrator, to aid in directing the distribution of coal to the Northwest. He is a well-known traffic expert and will spend a great deal of time in Washington in connection with the work.

Ivan Bowen, of the Minnesota railroad and warehouse commission, has been named State fuel administrator. He has started a canvass of the 2,255 retail coal dealers of the state, to ascertain how much they have on hand, what they have been assured they will get and what their absolute needs to serve through the winter, are.

MISSOURI

The El Dorado Springs Development Co., has been formed at El Dorado Springs, Mo., with a capital of \$300,000 and among other things will develop coal and gas leases. The shareholders are A. B. Stricklett, William True, Dr. L. T. Dunaway, C. E. Siders, M. A. O'Connor, Dr. J. W. Love and J. L. Ferguson.

The Mine of the Liberty Coal Co., of Moberly, Mo., has been reopened under agreement with the local union of the United Mine Workers of America and will mine enough coal to keep the plant of the Moberly Light & Power Co. going.

NEW YORK

The Florandin Equipment Co. has been organized by C. H. Florandin with offices at 110 W. 40th St., New York City, to represent the Conveyors' Corporation of America, Chicago, manufacturers of the American steam jet ash conveyor and the American trolley carrier.

The Buffalo Chamber of Commerce has appointed Charles L. Couch, president of the Weaver Coal Co., chairman of a special committee to look after coal supply and distribution. A preliminary meeting has been held, at which a sub-committee was set at work on a survey of the supply and needs of consumers. Anthracite will be looked after separately.

W. P. Smith and W. C. Denny, of Buffalo, have begun the organization of a new coal company, to be operated under the name of the W. P. Smith Coal Corporation. Mr. Smith was the representative of W. A. Stone & Co., of Uniontown, Pa., until the office was closed. Mr. Denny has been in the coal business in Toronto.

The Virginia Iron, Coal & Coke Co. for the three months ended June 30, 1922, reports gross earnings of \$210,782 against \$211,095 in the same period last year. Net earnings totaled \$95,959, after allowing for all charges, including interest and taxes. After allowing for the regular preferred dividend, the balance was equal to 33c. a share on the \$10,000,000 common stock outstanding. The net for the six months, after preferred dividends, is equal to 30c. a share on the common stock, against \$5.71 last year.

OHIO

Five automobiles, equipped for mine rescue work have been put into service by the Division of Mines of the Department of Industrial Relations. The cars, equipped with specially constructed bodies are to be stationed at central points in the mining area of the state for instant service and will take the place of the special railroad car which was held at the Ohio State University, in Columbus.

Papers have been filed with the secretary of state increasing the capital of the Bristol Block Coal Co., Logan, from \$25,000 to \$100,000.

Curtailment of operations of other city departments have been ordered by the Columbus officials in order to secure extra funds for the purpose of coal during the coming winter. It is believed that prices will be high and thus the move is made. Stocks on hand are small and will only last for 30 days, according to an estimate of the Columbus Board of Purchase.

PENNSYLVANIA

Governor Sproul on Aug. 8 announced that he had named a State Fuel Commission to co-operate with the Federal Fuel Commission. There are seven members of the commission who are authorized to name a special committee upon distribution. The commission's duties will consist in trying to avert speculation in coal and to see that there is an equitable distribution among industries and householders. The members of the commission are William D. B. Alney, chairman of the Public Service Commission, selected as chairman; James S. Benn, a member of the Public Service Commission, who has been in charge of the priority functions of that commission and in that capacity has been in touch with the work at Washington; William W. Purdy, president of the Pittsburgh Chamber of Commerce; Edgar C. Felton, Haverford, transportation expert; Hugh A. Dawson, Scranton; S. B. Crowell, Philadelphia, president of the Pennsylvania Retail Coal Merchants' Association, and former Mayor William J. Stern, Erie, connected with the Fuel Administration during the late war.

The following bituminous coal companies have been granted state charters recently: Waynesburg Coal Co., Connellsville, capital, \$100,000; treasurer, Edward K. Dick, Connellsville. Mining coal and manufacturing coke. Incorporators, L. F. Ruth, Connellsville; Edward K. Dick, Connellsville, and E. E. Morris, Waynesburg. Porter-Winwood Coal Co., Glenshaw, capital, \$25,000; treasurer, Edward Winwood, Sr., East Pittsburgh. Incorporators: W. H. Porter, Glenshaw; Edward Winwood, Sr., East Pittsburgh, and J. C. Schmidt, Pittsburgh.

The School of Mines of the Pennsylvania State College will give instruction to nearly 1,000 students during the coming year. During the last school year 800 miners and operators were given extension training by the college workers, while nearly 200 other students were in the regular residence courses in mining engineering, mining geology and metallurgical engineering. In order

that the School of Mines, in common with other schools of the college, may take in a larger number of students making application for admission, a building fund campaign for \$2,000,000 is now being carried on. It is planned to develop the college into the State University with accommodations for 10,000 students.

UTAH

J. T. and E. L. Rains, A. H. Jenkinson, R. T. Collier, H. M. Dinwoodey, all of Salt Lake City, and Wm. Stevens, Cedar City, have been granted permits to mine coal in this state.

The Carbon County R. R. has been organized by promoters of the Columbia Steel Co., recently formed with a capital of \$15,000,000. The railroad company will have a capital of \$500,000. The line will be 4.79 miles long and will lead to a township near Sunnyside believed to be underlaid with coal and recently purchased from the Utah Coal & Coke Co. L. F. Rains, president of the Carbon Coal Co., will be head of the railroad company.

WEST VIRGINIA

It has been necessary to institute suits of ejectment against most of the sixty-two miners occupying houses owned by the Brady Coal Corporation, in Monongalia County, in view of the failure of the miners to live up to their agreement to vacate company premises following a compromise reached in connection with eviction suits when the latter came up on appeal before the Circuit Court of Monongalia County recently. A similar compromise was agreed upon between the Rosedale Coal Co. and former employees, but the latter are still in company houses and hence ejectment suits will be filed against them. Twenty miners are under order to vacate houses at the Everettville mine of the New England Fuel & Transportation Co. The miners, however, have appealed their case. The Chaplin Collieries Co. has served notice on 80 of its former employees to vacate.

The Coalburg Colliery Co., of Ronda, on Cabin Creek in the Kanawha County field,

has filed in the Court of Common Pleas of Kanawha County application for a mandatory injunction to obtain possession of twenty-two of the company's houses. United Mine Works has filed a demurrer to the application. Judge Alexander, after hearing arguments reserved his opinion pending a settlement of the question as to whether a mandatory injunction would be the correct legal method of eviction or whether the company has other legal remedies.

Samuel Pursglove, Cleveland, extensively interested in the Monongalia field, owner of approximately all of the bonds of the Morgantown & Wheeling R.R., and also of a large portion of the receiver's certificates, has asked that he be permitted to enter as a party plaintiff with the County Court of Monongalia County and the Federal Savings & Trust Co., in order to bring about the sale of this road, which has been in the hands of a receiver for some time. Mr. Pursglove desires to be made a party plaintiff in order to enforce the lien of the bonds and interest coupons and receivers' certificates purchased and held by Pursglove against the company. It is probable that the effort to have the road sold will be resisted on the ground that Mr. Pursglove is a receiver and therefore an officer of the court.

BRITISH COLUMBIA

The Vancouver Island collieries are working at capacity. For weeks after the United States strike started there was little effect on the business of the operators, but recently the pressure has been felt and the entire output is being taken up. The Canadian Collieries (D) Ltd., producing 3,000 tons a day, is unable to meet the demand. Of this 1,000 tons is being taken by the Canadian Pacific and the Northern Pacific railways. The Canadian Western Fuel Corporation, Nanaimo, is furnishing 1,200 tons a day to the Great Northern, Union Pacific, and the Canadian National railways. The Coalmont Collieries, Ltd., Coalmont, (Nicola-Princeton Field) is producing about 800 tons a day and prepara-

tions are being made to bring the total to 1,000 tons. Most of this is being taken by the Great Northern, Canadian Pacific and Kettle Valley railways.

NOVA SCOTIA

The banks of soft coal in Cape Breton owned by the Dominion Coal Co., (British Empire Steel Corporation) are being attacked vigorously these days. In the past two weeks fifteen steamers have transported cargoes from these banks at Dominion, New Waterford, Reserve, New Aberdeen, Sydney Mines, and Glace Bay to St. John, Halifax, Boston, Montreal, Quebec, Portland. The banks at Dominion have been reduced 40 per cent in two weeks. Orders are coming in from the United States and Canada and this is the busiest season for the fleet of steamers owned by the Dominion company since the close of the war. The scarcity of anthracite has helped the bituminous coal trade wonderfully. Just as soon as the banks of coal have been sold, the mines in both Nova Scotia and New Brunswick will return to full time. In fact some of the Dominion collieries have already been restored to six days per week.

WASHINGTON, D. C.

Announcement has been made of the appointment of V. H. Palmer, of the C. Rice Coal Co., and the Milwaukee Western Fuel Co., who was formerly with the Ore & Coal Exchange, as assistant to C. E. Tuttle, in charge of Lake coal for the Federal coal distributing committee. Mr. Palmer came at once to Washington to assume his new duties.

Officials of the U. S. Bureau of Mines in charge of the supervision of mining operations on leased public lands have attended conferences regarding the construction of a railroad from Wamsutter, Wyo., to Craig, Col., for the development of the coal fields in Moffat and Routt counties, in Colorado. This project is of particular interest from the government standpoint, due to the fact that most of the coal mines in this field are being developed under Federal lease.

Traffic News

Deciding the complaint of the Lehigh Valley Coal Co., against the Director General of Railroads, the I. C. C. holds as follows: Rates on unprepared anthracite from mines and culm banks on the Lehigh Valley in the Lehigh and Wyoming regions of Pennsylvania to breakers in the same regions for preparation or re-preparation and re-forwarding by way of that railroad between June 25, 1918, and April 8, 1919, were unreasonable. Rates from the Rahn colliery at Seek, Pa., to other collieries and washeries on the Lehigh & New England R. R. during the same period were unreasonable. Rates on buckwheat No. 3 from collieries and washeries in the Panther Creek Mining district of Pennsylvania to Power House (Hauto), Pa., from Jan. 1 to June 24, 1918, were legal, but the rates from June 25, 1918, to Feb. 28, 1920, were unreasonable because they exceeded 25c. a ton.

The I. C. C. will give a hearing Sept. 6, at Boston, on several fourth-section applications of railroads for the establishment of rates on coal and coke between points in New England, and between points in New England and Eastern points.

Unreasonable rates on coal from various points to Omaha are alleged in a complaint by the Metropolitan Utilities District, of Omaha.

The operation of a line of railroad already constructed has been requested in an application to the I. C. C. by the Ballard & Thompson Railroad, the line being from Thompson to Sego, Grand County, Utah, to provide service for coal mines in the vicinity.

A hearing in the "Eastern" coal case, in which Indiana shippers are seeking a re-alignment of freight rates on coal from Eastern mines to northeastern Indiana, will be opened before the I. C. C., in Indianapolis, Sept. 11. On Sept. 13 the Twin City rate case will be reopened at Indianapolis. A decision on March 15 gave Indiana shippers freight reductions amounting to 25 per cent to Minneapolis and St. Paul, putting them on a parity with Illinois shippers. The new rate to the two Minnesota points automatically increased the rates from the St. Louis territory, St. Louis shippers contend.

The rate on coal shipped from the Middleboro-Jellico district of Kentucky over the L. & N. to Newport, Latonia, Covington and Andrews, in northern Kentucky, has been fixed at \$1.65 a ton in a decision rendered by the State Railroad Commission. The decision reduces the rate from \$1.90. Prior to the war the rate was 80c.

The complaint of the Perry Coal Co., will be heard at St. Louis, Sept. 21; that of the Virginia Coal Operators' Association at Washington, Sept. 21, and that of the Megeath Coal Co., at Omaha, Sept. 25.

Recent Patents

Coke-Oven Door Lifting Machine. Joseph Becker, Pittsburgh, Pa., assignor to The Koppers Co., Pittsburgh, Pa., 1,411,262. April 4, 1922. Filed Dec. 2, 1918; serial No. 264,965.

Coal-Loading Machine. Joseph F. Joy, Pittsburgh, Pa., assignor to the Joy Machine Co., Pittsburgh, Pa., 1,411,702. April 4, 1922. Filed March 27, 1918; serial No. 224,983.

Yielding Actuating Mechanism for Skip-Hoist Chutes. Robert H. Beaumont, Radnor, Pa., assignor to the R. H. Beaumont Co., Philadelphia, Pa., 1,411,831. April 4, 1922. Filed May 19, 1921; serial No. 470,754.

Miner's Lamp Tool. Herman W. Hoff, Bearcreek, Mont., 1,412,745. April 11, 1922. Filed Nov. 9, 1921; serial No. 513,996.

Coal Breaker. Frank Pardee, Hazleton, Pa., 1,412,793. April 11, 1922. Filed June 12, 1920; serial No. 388,462.

Mining Machine. Morris P. Holmes, Claremont, N. H., assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,412,868. April 18, 1922. Filed June 5, 1916; serial No. 101,728.

Switch System for Mine Locomotives. William E. Wolfe, Wilder, Va., 1,413,250. April 18, 1922. Filed April 28, 1920; serial No. 377,324.

Mining Machinery. Stephen E. Odell and Frank L. Clift, Bellingham, Wash., 1,413,289. April 18, 1922. Filed July 25, 1919; serial No. 313,362.

Mine Car. George E. Thackray, Westmont Borough, Pa., 1,414,056. April 25, 1922. Filed Aug. 15, 1921; serial No. 492,338.

Coming Meetings

New York State Coal Merchants' Association will hold its annual meeting at Richfield Springs, N. Y., Sept. 7-9. Executive secretary, G. W. F. Woodside, Arkay Bldg., Albany, N. Y.

Coal and Industrial Exposition under the auspices of the Huntington Chamber of Commerce will be held Sept. 18-23 in the Chamber of Commerce Bldg., Huntington, W. Va. The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will again hold its annual meeting in the same building during the exposition.

National Exposition of Chemical Industries will hold its eighth national exposition at the Grand Central Palace, New York City, Sept. 11-16. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Mining Congress. Twenty-fifth annual convention and exposition of mines and mine equipment will be held at Public Hall, Cleveland, Ohio, Oct. 9-14. Executive offices, the Hollenden Hotel; E. C. Porter, convention manager.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

American Institute of Mining and Metallurgical Engineers will hold its fall meeting during the week of Sept. 25 at San Francisco, Cal. It is proposed to arrange for a party to leave New York on Sept. 10, stopping at different cities en route. Secretary, F. F. Sharpless, Engineering Societies Building, New York City.

American Chemical Society's annual fall meeting will be held Sept. 4-9 at Pittsburgh, Pa.; divisional meetings will be held at Carnegie Institute of Technology and general meetings at Carnegie Music Hall.

The Rocky Mountain Coal Mining Institute will hold its next meeting at Glenwood Springs, Col., Sept. 7-9. Secretary, F. W. Whiteside, Denver, Col.

National Safety Council. Eleventh annual Safety Congress at Detroit, Mich., Aug. 22 to Sept. 1. Executive secretary, W. H. Cameron, North Michigan Ave., Chicago, Ill.